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ABSTRACT

The Guidelines Manual produced by the Media Guidelines Project consists of five major sections, the first of which is a checklist offering a roster of criteria related to media training programs and against which planners and evaluators can develop concepts, gather information, construct specifications and make judgments. The second part of the manual provides a conceptual organization of the media domain and training program recommendations which map the realm of media and report on the status, demands and priorities for media training. Section III lists job descriptors, arranging these work elements under responsibility groupings and functions, while the following section deals with media training for the future, projecting trends in media, the influence of tangential forces, and their implications for the training of media specialists. The report concludes with an annotated bibliography which compiles approximately 250 references pertinent to media training. (Author/PB)

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FINAL REPORT
Project No. 8-0520
Contract No. OEG 9-8-000520-0143-(007)

MEDIA GUIDELINES:
Development and Validation of Criteria for Evaluating Media Training

Volume II—Guidelines Manual

Dale G. Hamreus, (Ed.)

June 1970

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Office of Education
Bureau of Research

TEACHING RESEARCH
[illegible]

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Volume II - Guidelines Manual

Dale G. Hamreus (Ed.)
Teaching Research
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INTRODUCTION

In 1968 the Bureau of Research, USOE, funded the Media Guidelines Project which employed intensive job analysis and "clustering" techniques aimed at determining competencies currently being performed in managing, developing and utilizing media in instruction.

The purpose of the project was to produce guidelines and other information for planning media training programs and evaluating media-related training proposals and training program outputs. The ultimate purpose is to help insure that present and prospective training programs produce the competencies that will be required five and more years from now.

This Guidelines Manual is a tool which has been forged from the vast array of information generated and collected during the Media Guidelines Project. Like any tool, its application and manipulation has been visualized and tested by its manufacturers. It appears to be a practical device with high potential value. However, it is a prototype design and is subject to modification as changes are found to be desirable through use.

The Guidelines Manual consists of five parts:

1. The Guidelines Checklist -- a list of criteria related to media training programs for planners and reviewers to consider, remember, gather information about, develop specifications around, and to judge against.
2. A Conceptual Organization of the Media Domain and Training Program Recommendations -- a mapping of the domain of media and a report of the general status, current demands and priorities for training within the domain.

3. Job Activity Descriptors — a listing of what people do in the domain of media. These work elements are arranged under "responsibility groupings" and also categorized under abstract but more specialized headings called "functions."
4. Media Training for the Future -- a projection of training requirements into the near future, giving projections, contributing forces, and some implications for media training.
5. Annotated Bibliography -- a compilation of approximately 250 references pertinent to media training.

Each part of the Guidelines Manual has, in its introduction, suggestions for using that section. The user is encouraged to apply the manual in any way that may be appropriate to his local situation. It should be understood that the manual purports to be guidelines only, not rules. Its application, therefore, must be made with imagination, giving full reign to the creativity of the user.

Recognition must be given to the several members of the Media Guidelines Staff for their contributions to the various sections in the Manual. Dale Hamreus and Loring Carl were responsible for developing section one, the Guidelines Checklist. Section two, A Conceptual Organization of the Media Domain and Training Program Recommendations, was largely a total project staff effort with Kenneth Silber contributing significant leadership in developing the functions dimension of the model and Paul Dawson carrying the major responsibility in obtaining the questionnaire data.

The section on Job Activity Descriptors was largely the work of Loring Carl with assistance from Dale Hamreus. Section four, concerning Media Training for the Future, was principally coordinated by Roger Sell with

analysis and editorial assistance from Dale Hamreus and Loring Carl. Finally, the Annotated Bibliography section resulted from the efforts of Sandra Dawson.

Part I

Guidelines Checklist

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Guidelines Checklist

INTRODUCTION

Purpose: To assist those concerned with the design and appraisal of media training programs.

What is it? A list of criteria related to media training programs for planners and reviewers to consider, remember, gather information about, [illegible]velop specifications around, and to judge against.

What does it contain? A series of statements that are concerned with essential elements that must be considered in planning and evaluating a media training program. The statements are grouped under the following headings: Final Summary, Pre-Training Program Planning, Objectives, Training Specifications, Evaluation, Participants, Management, and Facilities. A rating scale and format for judging the adequacy of the provisions for each part is provided.

For whom is it intended? For those who plan/design media training programs, judge the adequacy of media training program proposals, and evaluate the outputs of media training programs.

How can it be used? As a guide for:

1. **Program Planners/Designers.** Designers of media training programs can use the Checklist as a guide to systematically organize their planning efforts. Other parts of the Guidelines Manual serve as a resource tool to assist in this planning. Each section of the Checklist can be used by program planners as follows:

    A. **Final Summary** -- These statements are to provide an overall set within which to develop program plans. However, the program designer must attend to the other sections of the Checklist before he can complete this final summary.

    B. **Pre-Training Program Planning** -- Items in this section are to be used to determine the compatibility of the proposed training program with local institutional constraints. Although these items are not central to the actual training program, they are critical to the ultimate success of the program.

    C. **Objectives** -- These statements serve as a guide in dealing with the goals of the training program and the essential details leading to those goals.

    D. **Training Specifications** -- This section contains items which direct the planner in attending to the details of instruction. Attention is focused on content, materials, settings, and strategies.

E. Evaluation -- These statements cover the major areas which the planner must consider in providing evaluation of the program.

F. Participants -- These items guide the planner in attending to trainee identification and selection.

G. Management -- These statements serve as a guide for the planner in attending to details such as organizing, staffing, supervising, and budgeting a media training program.

H. Facilities -- This section contains items to which the planner must attend in planning physical facilities for the program.

2. Proposal Reviewers and Program Evaluators -- The Checklist can be used as a guide for systematically judging the adequacy of either the proposal or the program outputs. Parts II, III and IV of the Guidelines Manual can be used as a basis for obtaining broad understandings of training priorities, current work performance and future trends.

3. Rating scale and additions to Checklist -- In the upper right corner of each page of the Checklist is a legend which gives the symbols to be used in rating program plans. A double column is included to provide a mechanism for planners and reviewers to compare their judgments.

   This Checklist is a prototype and subject to continued development. Therefore, it is expected that users will both modify existing statements and add new ones to meet their particular needs. Spaces for additions have been provided in each section.

4. Footnotes -- Periodically throughout the Checklist, items are footnoted to indicate the other Parts of the Guidelines Manual which contain supportive information. Footnote numbering will parallel numbers used to designate the Parts; viz. footnote 2 refers to Part II, footnote 3 refers to Part III, etc.

GUIDELINES CHECKLIST

Symbols
E.....provisions are Excellent
A..... " " Adequate
W..... " " Weak
M..... " " Missing
N..... " " Not needed

A. Final Summary (These items are to be answered when the remaining checklist pages have been completed. They were placed in the front to give the user the proper orientation to accomplishing the detailed planning.)

	Training Program Planner	USOE Reviewer
1. The training program has been sufficiently planned in all details to indicate that the institution is capable of producing trainees having the desired competencies.	______	______
2. The plan of the program indicates flexibility to meet local and national needs, both now and in the immediate future.	______	______
3. The needs for providing credible and usable information in an unbiased manner to parties concerned with decisions regarding training program continuation, expansion, modification, or replication in part or total has been specified.	______	______
4.	______	______
5.	______	______

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B. Pre Training Program Planning

	Training Program Planner	USOE Reviewer
1. The administrative commitment in the institution(s) in which training will occur appears sufficiently firm to support the program.	____	____
2. Pre-training orientation to heads of institutions, departments, districts, agencies, etc., who will have some level of responsibility in the training program, has been planned.	____	____
3. Acceptance and/or approval of the training program by those who will have some degree of decision responsibility in it has been obtained.	____	____
4. Resources which are critical to success in operating a training program, i.e., local support staff, outside personnel, relevant materials, analysis of instructional context, management controls, etc., appear to be available and sufficient to support the program.[3,4]	____	____
5. Procedures for disseminating pertinent information to participants prior to the training program have been established.	____	____
6.	____	____

---

[3] Information regarding this item can be found in Part III of this Manual.
[4] Information regarding this item can be found in Part IV of this Manual.

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C. Objectives

	Training Program Planner	USOE Reviewer
1. The proposed program will prepare individuals with skills that are critically needed in the field.[2]	____	____
2. Terminal objectives have been defined and are clearly stated.[2,3,4]	____	____
3. Terminal objectives specify the level of proficiency expected of the learner.[3]	____	____
4. Enabling or sub-objectives which lead to terminal objectives have been defined and are clearly written.[3]	____	____
5. The conditions for demonstrating learning outcomes have been clearly stated in each objective.	____	____
6.	____	____
7.	____	____

---

[2] Information regarding this item can be found in Part II of this Manual.
[3] Information regarding this item can be found in Part III of this Manual.
[4] Information regarding this item can be found in Part IV of this Manual.

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D. Training Specifications

D. Training Specifications	Training Program Planner	USOE Reviewer
1. The types of learning required to perform the stated objectives, e.g., identification, classification, analysis, rule using, have been identified.[3]	____	____
2. The learning experiences that must be provided participants to enable them to achieve criterion standards have been described.[3,4]	____	____
3. The sequencing of instructional experience has been defined.	____	____
4. The setting required for each learning experience has been specified.	____	____
5. Instructional strategies for teaching each learning experience have been specified.	____	____
6. The instructional materials needed for each learning experience have been determined.[3,4]	____	____
7. The required instructional materials are available either through commercial and/or other sources, or plans for their development have been specified.	____	____
8. For instructional materials that are not available elsewhere, specifications for their development have been clearly detailed.	____	____
9. Limitations regarding time and available resources have been considered in planning for the development of new instructional materials.	____	____

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[3] Information regarding this item can be found in Part III of this Manual.
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	Training Program Planner	USOE Reviewer
10. Equipment required in instruction has been specified.	_____	_____
11. The rationale for use of unique and/or unusually expensive equipment has been stated and justified.[4]	_____	_____
12.	_____	_____
13.	_____	_____

---

[4] Information regarding this item can be found in Part IV of this Manual.

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E. Evaluation

	Training Program Planner	USOE Reviewer
1. Procedures for evaluating the materials to be used in training have been defined.	____	____
2. Methods for evaluating the appropriateness and efficiency of the procedures to be used in training have been specified.	____	____
3. Methods for evaluating the degree to which the training program is effective in reaching its objectives have been specified.	____	____
4. Procedures for determining the utility and feasibility of training program materials when they are used in the field by trainees have been specified.	____	____
5. Evaluation of training program management has been specified.	____	____
6. Procedures for assessing the impact of the training program in the field have been specified.	____	____
7. Methods to assess the timeliness, economy, validity, and reliability of evaluative information have been identified.	____	____
8.	____	____
9.	____	____

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N..... " " Not needed

F. Participants

	Training Program Planner	USOE Reviewer
1. The essential characteristics of the individuals to be trained have been clearly defined.	____	____
2. The optimum number of trainees has been determined and justified.	____	____
3. Criteria for participant eligibility including entry competencies have been established and clearly stated.	____	____
4. Criteria for participant screening and selection have been clearly defined.	____	____
5.	____	____
6.	____	____

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M..... " " Missing
N..... " " Not needed

G. Management

	Training Program Planner	USOE Reviewer
1. Job descriptions defining duties and responsibilities of all staff positions have been developed.[2,3,4]	____	____
2. The competencies of both professional and support personnel are appropriate in terms of accomplishing the objectives of the training program.	____	____
3. Commitments from outside staff and resource personnel who are listed have been obtained.	____	____
4. The number of staff members identified is sufficient to perform the services called for in the training program.	____	____
5. In-service training to orient the staff to all phases of the training program and to instruct them in specific needed skills has been planned.	____	____
6. Procedures that permit all persons directly affected by the training program to be represented in policy formulation and revision have been specified.	____	____
7. The budget is clearly and concisely stated and supported by sufficient data and narrative to justify it.	____	____
8. A plan to inform all appropriate personnel of new or revised policies, training contents, and operating procedures has been prepared.[3]	____	____

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[2] Information regarding this item can be found in Part II of this Manual.
[3] Information regarding this item can be found in Part III of this Manual.
[4] Information regarding this item can be found in Part IV of this Manual.

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	Training Program Planner	USOE Reviewer
9. A feedback network has been specified which provides for the exchange of information regarding personal matters between director, trainees, and staff.[3]	____	____
10. A feedback network has been specified which provides for the exchange of information regarding trainees performance between director, trainees, and staff.	____	____
11. A communication service has been planned for keeping colleagues, interested publics, and institutional heads informed about accomplishments.[3]	____	____
12. The organizational structure has been sufficiently defined and charted to assure that responsibilities will be assigned effectively.	____	____
13. The organizational pattern of the training program is flexible and adaptable to meet changing requirements.	____	____
14. Supporting services, i.e., production, technical, statistical, clerical, personal, etc., both within and outside the institution, have been planned.	____	____
15. Recreational and social activities to encourage good staff and trainee morale have been defined.[3]	____	____
16. Advisory bodies designed to review the adequacy of program planning and operation with a membership commanding respect, have been planned and tentative commitments obtained.	____	____

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[3] Information regarding this item can be found in Part III of this Manual.

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	Training Program Planner	USOE Reviewer
17. The plan for scheduling instruction, facilities, materials, equipment, and personnel has been specified.	____	____
18.	____	____
19.	____	____

Symbols
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M..... " " Missing
N..... " " Not needed

H. Facilities

	Training Program Planner	USOE Reviewer
1. Space of acceptable quality has been specified and planned for:		
a. Classrooms	____	____
b. Laboratories and/or studios	____	____
c. Carrels	____	____
d. Study areas	____	____
e. Conference rooms	____	____
f. Office facilities	____	____
2. Library resources to meet staff and trainee instructional needs have been planned.	____	____
3. Housing to accommodate trainees and outside staff have been identified.	____	____
4. Transportation which meets all personnel and physical needs of the training program has been determined.	____	____
5. Storage is available to handle all physical needs of the training program.	____	____
6. Eating facilities which are conducive to satisfied customers have been considered.	____	____
7. The installation and operation of special equipment requiring particular physical facilities, i.e., power supply, venting, lighting, etc., has been specified.	____	____
8.	____	____

Symbols

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W.....	"	"	Weak
M.....	"	"	Missing
N.....	"	"	Not needed

	Training Program Planner	USOE Reviewer
9.	_____	_____

Part II

Conceptual Organization of the Media Domain and Training Program Recommendations

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Conceptual Organization of the Media Domain and Training Program Recommendations

INTRODUCTION

To provide some systematic basis for the planning of media training programs it was first necessary to put some order to the total field of media or as used in this manual, the Media Domain. This part of the manual first gives attention to conceptual "mapping" of the domain of media and then addresses issues concerned with media training. Specifically, Part II is organized around the following topics:

- A conceptual organization of present media training
- The general status of present media training
- Current demands for media personnel required to support classroom instruction.
- Priorities recommended for media training programs.

Both the analyses and recommendations which follow are considered tentative--they are based on the best information available at the present time. Additional and continuing studies will be necessary to update this data base. Also, media programs and recommendations for program priorities will have to be modified accordingly.

A Conceptual Organization of the Media Domain

Traditionally, jobs have been described in terms of job titles rather than the goals and activities that make up the job. For example, in the media domain typical job titles include Building Coordinator, IMC Director, Librarian, Film Producer, Graphics Technician, etc. Although such titles serve as a means of providing some degree of common reference in discussion, they are not very useful in determining media training requirements.

At the same time, simply by listing all of the specific duties that incumbents fulfill in performing their jobs would become so massive and unmanageable that by itself it would be of little use in determining media training requirements.

The problem of identifying the competencies needed by media specialists in performing their jobs has been found to be a complex task. Many jobs are performed at various levels of complexity and in a variety of situations. Obviously to produce useful media training recommendations there is a requirement for some means of organizing the data into a manageable structure. As a first step in that direction the following assumptions were specified:

1. There are various institutional settings in which the identified media-related activities are performed.

2. There are various responsibilities that media specialists assume in performing their jobs that are common across different institutions and activities.

3. There are various functions that are carried out by media specialists common to the various institutional settings in which media specialists are employed.

In order to organize the several complex aspects of the media domain into a manageable arrangement, a three-dimensional structure was developed. The three dimensions included institutional settings, responsibility groupings, and functions and are displayed in Figure 1.

The Institutional Settings dimension in Figure 1 identifies agencies in which media-related jobs are found and includes the following: elementary and secondary schools, county and large school districts, state education agencies, colleges and universities, business and industry, military, and government agencies. Obviously, many additional degrees of refinement in institutional settings are possible, e.g., sub-division, size and location; however, at this early stage in attempting to organize training requirements in the media field, the technical and financial limitations in collecting and distinguishing manpower data argued for the above limited structure.

The dimension of Responsibility Groupings in Figure 1 refers to the types of responsibilities represented by the various media jobs in the different institutional settings. The Directive-Administrative grouping includes job activities that represent top administrative and management responsibilities which are necessary to control media operations. The Professional grouping includes job activities that deal with working directly in the use of media with learners and learning problems, e.g., teachers, instructional designers, etc. The Artistic-Production grouping represents job activities that carry the responsibility of working directly in the creation and production of instructional media elements in support of professional type activities, e.g., graphics artist, photographers, etc. The Technical grouping represents job activities that deal directly with the design, fabrication, technical adjustment, and operation of mediating devices required in instruction in support of the professional type activities, e.g., TV cameraman, technical processor, etc. (The above responsibility distinctions are not intended to argue that artistic-production and technical types are or are not professionals in their jobs). The Clerical and the Manual groupings refer to job activities that are necessary to support all other media-related type jobs. These two groupings perhaps do not come under direct concern for media training requirements, but currently have such a high degree of relationship to other media-related jobs, that it was felt their inclusion could at least provide help in planning on-the-job training.

The above responsibility groupings have been formed principally for efficiency purposes and are not to be regarded as absolute categories. The approach employed in achieving these groupings was to subject the more than 3,000 media job activity descriptions gathered in the Media Guidelines

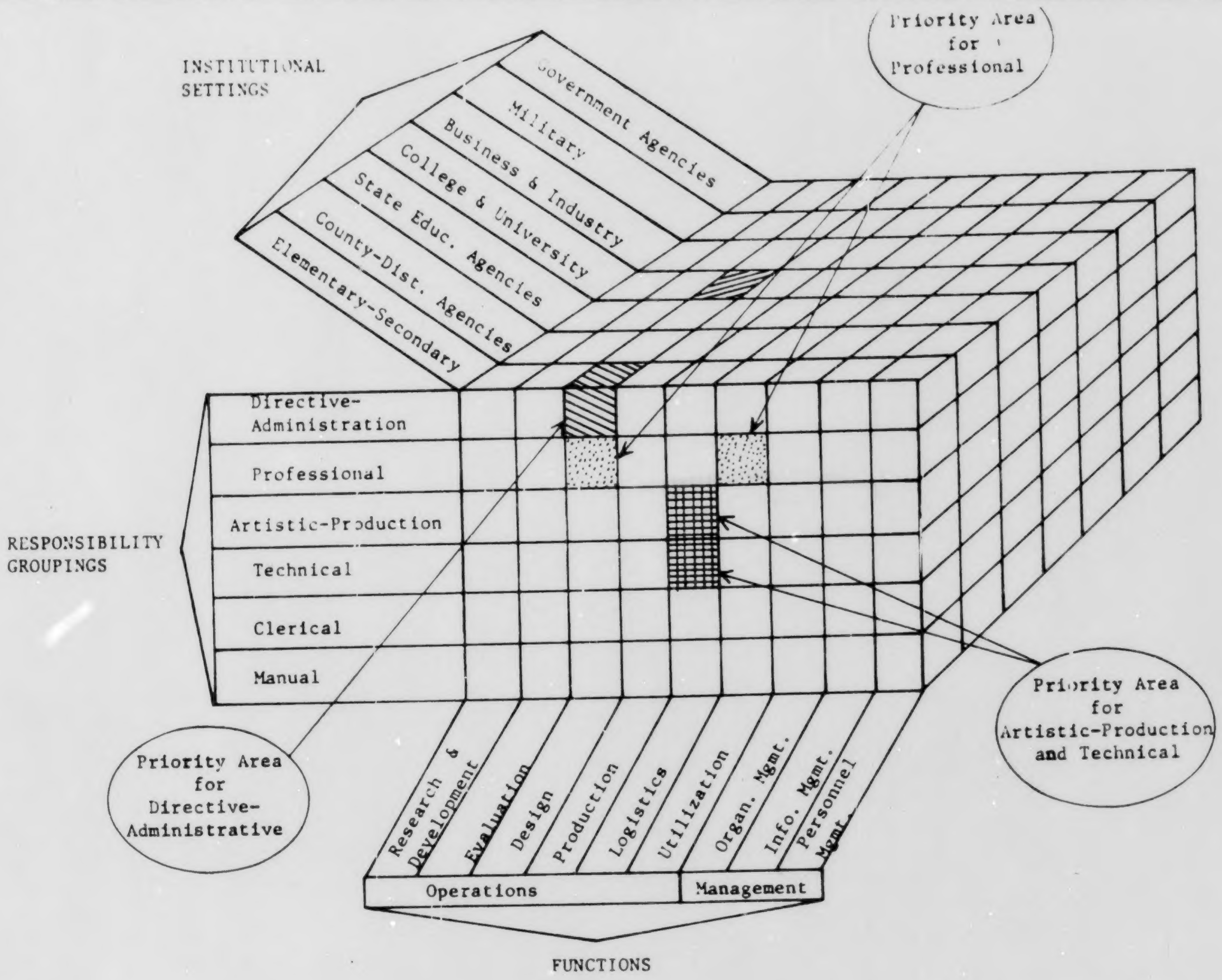
INSTITUTIONAL SETTINGS
Government Agencies
Military
Business & Industry
College & University
State Educ. Agencies
County-Dist. Agencies
Elementary-Secondary
Priority Area for Professional
RESPONSIBILITY GROUPINGS
Directive-Administration
Professional
Artistic-Production
Technical
Clerical
Manual
Priority Area for Artistic-Production and Technical
Priority Area for Directive-Administrative
Research & Development
Evaluation
Design
Production
Logistics
Utilization
Organ. Mgmt.
Info. Mgmt.
Personnel Mgmt.
Operations
Management
FUNCTIONS

FIGURE 1 - THREE DIMENSIONAL STRUCTURE FOR ORGANIZING MEDIA RELATED TRAINING REQUIREMENTS

project to a comparative analysis. A computer program was prepared which systematically compared each description with all other descriptions and then formed clusters of descriptions that were highly similar. The results produced six clusters of descriptions that were different one from another and which were subsequently termed responsibility groupings. Earlier it was mentioned that these responsibility groupings were formed for efficiency purposes. It must be made clear that most persons currently employed in media-related work tend not to have jobs that fall within a single responsibility grouping as defined above. It is more common for such person's job to cut across several of the above grouping areas and not unusual to find some whose jobs encompass all of them. The rationale for defining and breaking out such a grouping is to provide a clearer awareness of the specific type of activities required in any responsibility area. This in turn should provide directors of training programs a much clearer basis in defining specifically what training they wish particular individuals to experience. In time this approach should result in more systematically defined job lattices in the media domain which in turn will offer incumbents and prospective employees an organized structure for professional growth.

The Functions dimensions in Figure 1 refers to more or less specialized areas of work rather than specifically what gets done in the job. The functions represented have been identified on the basis of careful analysis of current media-related job actions and from existing literature. A functions dimension was considered to be a clarifying structure around which both current and projected activities of media-related jobs could be organized. It must be emphasized that actual media jobs are seldom, if ever, so pure as to represent a single function, e.g., production, design, evaluation. The principle value in such a functional breakout lies in its providing for organization and grouping of job activities such that decisions regarding specialized training program contents can be made more systematically.

As can be seen in Figure 1, functions have been separated into two broad classes: Operations and Management.

The operations class of functions sorts out those activities considered essential to the process of operating or carrying out the work of a media service. Operations functions include:

1) Research and Development - to generate and test theory and methodology related to instructional technology and to develop validated instructional media products.

2) Evaluation - to provide information necessary for making appropriate adaptive decisions regarding the operations and management of media in instruction.

3) Design - to translate theory and empirical evidence about learners, media, content, settings and techniques into instructional products by following both design specifications and artistic creative standards.

4) Production - to make specific instructional products by following both design specifications and artistic creative standards.

5) Logistics - to provide acquisition, storage, supply, and maintenance support for the appropriate operations and management of media in instruction.

6) Utilization - to actually employ media in instructional settings for the purpose of bringing about specified changes in learners.

The management class of functions deals with those activities considered necessary to adequately control the operations of media services. Management functions include:

1) Organization Management - to plan, establish and maintain the organizational structure necessary to support the activities required in the operations and management of media service.

2) Information Management - to plan, establish and maintain the means for supplying essential information, both internal and external, necessary to the operations and management of a media service.

3) Personnel Management - to provide qualified and adequately prepared staff for the operations and management of a media service.

The two dimensions of the matrix formed by the responsibility groupings and functions provide a basis for generating a series of questions which are useful for planning media training programs. For instance, what is the evaluation function of directive-administrative personnel as compared to professional personnel? Should it be the same or different? Or, what should it be and how should we prepare people to perform this particular function? It is not appropriate to presume that every function must or will be perormed in every responsibility grouping, i.e., not all cells in the matrix generate equally meaningful questions. However, casting functions and responsibility groupings in such a matrix form helps define and differentiate an otherwise bewildering array of tasks. When the third dimension of the domain of media, i.e., institutional settings, is added to this two dimensional matrix, the above questions become more specifically oriented. In other words, questions concerning responsibilities and functions become specific to a particular institutional level and therefore more meaningful to planning training contents.

The three dimensional structure shown in Figure 1, provides the basis for organizing statements of actions that media specialists perform in the conduct of their jobs into a controllable form. For example, consider the production function. Cluster arrays of media personnel job actions generated in this function, have been formed for each of the responsibility groupings in Figure 1. A sample list of production function actions performed by media specialists in county-district agencies for each responsibility grouping might be as follows:

A. Directive-Administrative
   1. Insures that production specifications are met
   2. Supervises television production
   3. Selects lowest bid that meets specifications
   4. Prices product
   5. Establishes priorities for all production aspects

B. Professional
   1. Writes shooting script
   2. Writes outline for computer-assisted lesson
   3. Builds prototype product
   4. Confers with client for approval of rough copy and revisals
   5. Plans with production technician for product development

C. Artistic Production
   1. Shoots black and white motion pictures
   2. Adjusts light for transition of slow and fast motion
   3. Makes rough sketches and submits to client for approval
   4. Selects proper materials for final art work
   5. Selects music and sound effects

D. Technical
   1. Judges by meter level and listening whether sound distortion exists during recording
   2. Processes black and white film
   3. Adjusts bias occillator by meter on machine
   4. Retouches negatives
   5. Switches TV cameras to "monitor" at the request of engineer for shading

E. Clerical
   1. Assists in collating and binding
   2. Writes-up work orders
   3. Proofreads stencils against card catalog
   4. Types correspondence
   5. Makes office copies

F. Manual
   1. Delivers completed lamination to shipping room
   2. Cuts plastic film to required size and lays materials on it
   3. Tacks dry mounting tissue to back of material with tacking iron
   4. Trims mounting tissue to exact size of material
   5. Makes out charge slip for time and materials.

A listing of activities performed by media personnel in their jobs, arranged by function, and responsibility grouping is provided in Part III of this manual. The lists of activities for any one category range in numbers from as few as five to over two-hundred. Continued manpower studies currently in progress are intended to refine these lists. In time these listings should allow institute directors much greater precision in selecting training contents that are more directly related to the needs of their intended participants.

The General Status of Current Media Training

This section attempts to make judgments regarding the adequacy of training currently being provided media specialists. However, data from which these judgments were made are limited in terms of representativeness and scope. Therefore, statements that follow, summarizing the current status of training, must be considered highly tentative. They are based on the following data:

1. Both the Media Guidelines project and the DAVI Jobs In Media Study engaged in intensive job interviews and analyses of media-related jobs. These efforts resulted in interviewing approximately 200 media job incumbents representing institutions from the elementary-secondary schools, county school district agencies, state educational agencies, colleges and universities, business and industry, and the military. The number of task descriptions generated totaled roughly four thousand. On the basis of these analyses, it was logically possible to infer the comprehensiveness of incumbents' training in terms of what they actually did on the job. This does not account for the quality of training received nor does it sort out very clearly the extent to which on-the-job training has influenced performance.

2. In a separate effort to determine the extent to which current programs are training media specialists to perform the various functions, a stratified (by size of school and region), representative sample (i.e., no intentional bias) of 150 schools was surveyed in the Media Guidelines Project. Media supervisors (superintendents, principals or curriculum supervisors) were asked to answer questions concerning the present and future needs for media personnel of school districts; how well that district was able to meet these needs; the qualifications required of media personnel; and the description of media personnel employed in the district.

   The returns, although inconsistent among districts and fragmented in terms of answering the questions, suggested that media specialists' tasks were centered primarily around conducting some inservice workshops, putting out some form of staff "bulletin," and principally providing support in the classroom use of media. The unfortunate impression received in reading many of the letters from large school districts was that they were really not too sure what a media specialist was supposed to do, but that for one reason or another their school should have one.

3. In an effort to get additional data regarding deficiencies of training, twenty leaders in the educational media field were invited, as a part of the Media Guidelines Project, to respond to a questionnaire. The questionnaire consisted of ten "open-ended" questions, intended to elicit divergent responses on several topics and issues pertaining to training media personnel. A unique feature of the

instrument was that respondents were recorded on magentic tape, permitting in-depth reactions to questions with a minimum of time and effort.

The persons invited to respond included trainers of graduate programs, directors of large county (Los Angeles) and University media centers, and instructional researchers. The results of this questionnaire indicated that the highest training need was for the preparation of trainers at the college and university level to prepare media personnel for the schools. Second, in order of training needs, was the preparation of school media personnel in such areas as evaluation, curriculum development, instructional design and IMC management. Third need was for the training of teachers in the utilization of media in teaching. The lowest training need was for media support personnel, i.e., TV. graphics, photography, etc.

The complete results of this questionnaire are reported in Volume I, Report of the Project, of the Media Guidelines final report.

4. Additional data were obtained by telephone interviews with educational media leaders from the following sources. The four major universities graduating media specialists; i.e., Indiana University, Michigan State University, Syracuse University, and the University of Southern California; and from Robert Milkman in the New York State Department of Education. A summary of the responses regarding adequacy of preparing media personnel follows:

Approximately 100 colleges and Universities offered graduate coursework in "media" and related areas during 1968-69 academic year. Fifty-two of these programs granted either the doctorate or masters degree, while the remaining forty-eight offered coursework (i.e., more than three courses) in media but without the graduate degree. Of the fifty-two degree-granting programs, all offered the masters degree, while only fifteen granted the doctorate.

Within the fifty-two masters programs there are more than 600 graduates per year, with a maximum of 2,000 now pursuing degrees on either a part of or full-time basis.

In the fifteen doctoral programs there are a maximum of 100 degrees granted each year, with nearly 60 percent of these coming from four major institutions as follows:

Institution	No. of Doctorates/year*
U.S.C.	12
M.S.U.	7
Syracuse U.	15
Indiana U.	22

* Estimates made by department chairmen of each institution.

No estimates are available, at this time, on the number of people benefiting from special programs such as summer training institutes. Nor are accurate figures available on the number of students in "specialist" programs at the graduate level.

According to estimates by department chairmen of the four major doctoral schools, graduates tend to be placed as follows:

Colleges and Universities	75 percent
Public Schools	15 percent
State & Govt. Agencies	5 percent
Industry & Business	5 percent

In the category "Colleges and Universities" 10 percent of these are community college positions, 50 percent are for academic appointments in schools of education, while the remaining 40 percent include administrative, research, and instructional design functions.

A greater demand is occurring in community colleges for design people, while the public schools remain low in this respect.

Generally, most graduates in media find themselves in an administrative role of some sort, either full or part time.

On the basis of the above data, job description data emphasizing the paraprofessional level of training from the DAVI Jobs in Media Study Project, reviews personnel for schools, an extensive review of the media literature, and the opinions of the writer, the following summary statements of the status of training in each of the nine function areas have been prepared:

Research and Development Function - Currently, very little training is being provided which produces competencies in the research and development function. The training that is occurring in this area is limited, by and large, to a few university-based graduate programs. Unfortunately graduates of such programs, thus, enhancing the capability for future manpower development, but greatly limiting the manpower presently available and qualified to conduct research and development on educational media. Some on-the-job training is occurring in a few research agencies and Regional Laboratories; however, this constitutes a relatively small manpower pool and in many cases seems to be preparatory to formal pursuit of the doctorate.

The need for the research and development function at the school, county, university, and industry levels appears to be expanding rapidly as evidenced by the number of people being sought. The research and development function expands proportionately with increases in instructional technology and systems development. Perhaps one of the major limitations to the growth of newer instructional systems (equally slow to emerge from the private sector) is in the limited number of qualified research and development personnel.

Evaluation Function - Perhaps in considering adequacy of training for all functions, evaluation is currently the weakest. Although some forms of evaluations are included in current training, e.g., physical quality of audio-visual materials and check list determination of the presence or absence of something; other forms of evaluation are not included in current training, e.g., formative and summative capabilities that can provide information appropriate for adaptive decisions. Decision-makers presently are forced to make instructional decisions on subjective evidence.

Design Function - Limitations in trained instructional designers are just as critical and the same arguments pertain as for Research and Development personnel. At the present time, such persons are rare and eagerly sought. However, some questions have yet to be answered about the design function.

For example, how does design interpose between the structure of knowledge, characteristics of the learner, and the type of behavior sought in the learner? The result of the fit of design between instruction and learner, like the interposition of medical technology between the medical researcher and patient, depends upon the training and wisdom of the practitioner.

Production Function - The training provided in the area of production appears to be adequate, with minor exceptions, to meet the need. The principal exception appears to be that of graphics. Manpower sources in graphic skills have in the past been basically art students and commercial advertising "dropouts."

The same general problem as expressed in the design area occurs here (as well as each of the other functions to follow) i.e., the interface problem related to the continuing increase in knowledge regarding learner characteristics, instructional strategies, properties of media, etc. Successful production depends more and more upon the fit achieved among Research and Development, design, evaluation, logistics and utilization.

Future training programs for the production function must take into account the issue of other function interface.

Logistics Function - Currently, the area of logistics appears, far and above any other function, to be receiving the greatest training emphasis. From all available evidence, this training appears to be adequate to meet current needs.

The only reservation that should be made is that as newer techniques emerge, e.g., computerized systems for cataloging and storing, updating in training competencies must occur.

Utilization Function - Although some attempts at training for utilization are occurring, they appear to be neither extensive enough nor capturing a sufficiently large audience to have much impact. However, this problem is also related to the setting to which the training utilizer returns. When the setting is non-supportive (most frequently the situation) either because of physical problems or lack of leadership, it usually has an attenuating influence on the trainees subsequent behavior. (NOTE: it is not unusual for large school districts to report that they are not too sure of what such trained persons are supposed to do, but if Federal money supports the training, they will accept it!)

Management Function - With minor exceptions, there appears to be no formal training currently provided in any of the three management functions: organization, information, and personnel. The exceptions are low level training efforts in administrative activities for IMC directors and the training of teachers of media.

Incumbents in management positions have either acquired skills from other jobs and OJT or taken course work independently outside of the formal media program.

Current Demands for Media Personnel Required to Support Classroom Instruction.

At the present time, there are no comprehensive statistics documenting the need for differing kinds of media personnel, qualified to perform the various functions identified. Reports from Indiana University, Michigan State University, Syracuse University, the University of Southern California, and the Milkman Study cited in Section 2 provide the best available estimate of media manpower requirements.

Information from available sources suggest the following provisional estimates concerning the demands for media personnel required in each function.

Research and Development Function - It appears that the demand for qualified media researchers far exceeds the number being prepared. The training that is provided is limited by competing curriculum requirements forcing the media specialist to be qualified in all phases of media management, development and utilization. Requirements are moderately heavy and increasing. No actual numbers can be projected, but it is highly unlikely that any number trained in the immediate future will be sufficient to meet the demand.

Design Function - Training for design competencies, like that of research, is limited in that few programs exist which emphasize this function. Requirements are heavy and increasing.

Production Function - Some production training is being provided. Both professional and paraprofessional programs offer limited training in production competencies. Present emphasis appears to focus on the mechanical operation of production equipment and related skills, without appropriate emphasis on translation of design specifications to achieve learning outcomes. There is moderately heavy need for additional training, but the need seems not to be recognized by practitioners.

Evaluation Function - Virtually no significant training of evaluation competencies in the media field exists today. That which does occur is superficial in nature. Requirements are considered heavy.

Logistics Function - While there may be specific exceptions, no serious deficiencies appear to exist in skills related to the logistics function. Requirements are minimal (that is, beyond that which is currently being provided).

Utilization Function - Training in utilization skills is not adequate, but is actually fairly extensive in proportion to other media training. However, it does not reach a large enough audience and those that it does reach in returning to their schools, are frequently submerged in a neutral to non-acceptance environment. In order for such training to make significant impact, it will probably be necessary for the colleagues of those who are trained to acquire more positive attitudes in the use of media in instruction. Requirements are considered heavy.

Organizational Management Function - Certain aspects of organization management competencies appear to receive no formal training whatsoever; namely, policy formation, costing, and adaptation. Limited training is being provided in administrative and coordination skills. Requirements are considered extensive.

Information Management Function - No formal training in information management skills currently appears to be provided in the media field. Some dissemination of information capabilities are emerging in allied disciplines; however, these are not yet systematically organized in instructional media training. Promotion training is less organized and further removed from the media field. However, a considerable knowledge base exists in other disciplines and could be made available to the media field. Requirements are considered extensive.

Personnel Management Function - Other than some limited forms of personnel training functions taking place in teacher education institutions, no personnel management competency training appears available in the media field. Requirements are considered extensive.

Recommendations for Media Training Priorities

Recommendations for media training priorities were prepared and submitted for review to the Leadership Training Institute (LTI) Advisory Panel of the Media Specialist Program of the Bureau of Educational Personnel Development. Modifications were subsequently made to the recommendations until they were acceptable to the Advisory Panel. Therefore, the recommendations that follow represent those that advisors to the BEPD of the U.S. Office of Education considered could best satisfy the purposes of the Media Specialist Program of the Bureau.

The ultimate objectives of the Media Specialists Program should be specified in a form that permits objective evaluation of the degree of their attainment. Thus, the present "more and better" objective is inadequate to guide program operations.

Although data presently available to judge the adequacy of media personnel training does not permit the degree of refinement desired in making recommendations, it does suggest a general structure by which more refined judgments of adequacy can become a reality.

It is recommended that the structure set forth in Figure 1 be provisionally adopted as the basis for organizing the collection of data evidencing the adequacy of training. This structure will permit determinations to be made regarding the adequacy of media services by job responsibility, function performed, and institutional setting. For example, how adequately trained are incumbents in directive-administrative responsibilities for evaluating specific media in the elementary-secondary schools? Or, how adequately trained are incumbents in performing production functions across all responsibility groupings in the colleges and universities?

The structure in Figure 1 would permit many levels of analysis to be performed. Literally, every cell in the cube could be judged, or "slices" could be taken off in any of the three dimensions, i.e., judging each institutional setting in terms of adequacy of responsibility groupings by functions, judging each responsibility grouping in terms of adequacy across institutional settings by functions, and judging each function in terms of adequacy across responsibility groupings by institutional settings.

Once such a data base can become established, then additional refinement can be considered in all dimensions of the model.

A modified version of the structure in Figure 1 is recommended for the Media Specialist staff to be used as a means of classifying training proposals. Such a structure would permit monitoring of the relative numbers of proposals received by function and institutional level and could be used to regulate the funding of proposals to assure proportional coverage of priority areas. The matrix in Figure 2 suggests a format for such monitoring.

	INSTITUTIONAL SETTINGS			
FUNCTIONS	Local or State Agencies	Junior College & Technical School	College & University	Elementary & Secondary
A. Operations & Utilization				
Developmental Research				
Evaluation				
Design				
Production				
Logistics				
Utilization				
B. Management				
Organization				
Information				
Personnel				

Figure 2. Matrix for Media Specialist Staff to Classify Training Proposals

In considering priority recommendations for continuing projects established under BEPD, the focus must be placed on those areas where inadequate training currently exists. The recommendations that follow are based on available data and represent a consensus among current BEPD Media Specialist Panel members as-of September, 1969.

It is recommended that:

1. Priority be given to the training of persons responsible for directive administrative responsibilities (as defined in Section 2) with particular emphasis on the design function. (See Figure 1 for graphic display of priorities).

2. Priority be given to the training of persons with professional responsibilities (as defined in Section 2) with particular emphasis on the design and utilization function with emphasis on the utilization function for pre-service training.

3. Priority be given to the training of persons with artistic-production and technical responsibilities (as defined in Section 2) with particular emphasis on the logistics function.

4. Multiplier Effect - in order to achieve maximum impact of available resources, it is recommended that BEPD be concerned with emphasizing the "multiplier" effect in the funding of training programs. Basically, three kinds of training programs are funded in the Media Specialist Program at the present time. These may be summarized as follows:

   Type 1. Long-term fellowship and academic year institute programs which produce both masters and doctoral level people and media specialists trained without reference to degrees.

   Type 2. Short-term institutes, e.g., 3-5 week and/or part-time programs, aimed at upgrading the skills of media specialists.

   Type 3. Exemplary inservice programs designed to train a total staff rather than media specialists only. Training usually is conducted in a public school setting.

   The multiplier effect may be achieved in each type program as follows:

   Type 1. For long-term programs, institutional commitment should be given to indicate the type of program the institution intends to offer, the type of trained personnel program required to implement such a program, the individual or individuals they desire to have trained and the commitment of the individuals to return to the sponsoring institution. Long-term programs should make every effort to assure that individuals trained are utilized for training other media specialists.

   Type 2. For short-term programs there should be an involvement of a consortium of institutions. For example, a consortium might include a training agency and a participant agency(ies), in which the training is actually conducted in the participant agencies setting. Commitment should be given by the participant agency(ies) (i.e., school system(s) and possibly a State Department of Education) agreeing to share costs for training, e.g., trainees' travel and per diem (if involved), and stipend equivalents. Furthermore, the participant agency(ies) should continue training within their own system. The training agency should provide cadre training for multiple school districts.

Type 3. Exemplary programs which may affect only one school system should be given the widest possible dissemination. Major budget items should include support for evaluation and publicity through all mass media. Present programs often do produce significant improvements, but insufficient attention is given to documenting those effects and to informing others of them.

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Job Activity Descriptors

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Job Activity Descriptors

INTRODUCTION

The purpose of this part of the Guidelines Manual is to provide an organized listing of descriptions of media related job activities for persons interested in planning or reviewing media training programs. Each activity descriptor represents one small but important part of some media related job. However, the listing does not attempt to pre-order or combine these activity descriptors into groups which would be commonly recognized as job descriptions. They are instead organized around two separate areas called responsibility groupings and functions, respectively. These two areas will be explained shortly, but first the rationale for not grouping descriptors by job titles.

During the Media Guidelines project nearly one hundred different media related jobs were analyzed in considerable detail from which over three thousand job activity descriptions were generated. Very early it was discovered that job titles were an ineffective method for organizing these descriptions because of two phenomenon: (1) there appeared to be almost an endless variety in the way that the activities of jobs having the same title were combined, and (2) there was an apparent haphazard order in the way in which different titled jobs in various situations often combined many of the same activities. For example, in terms of the first phenomenon, one could never be sure that simply because the job was titled Instruction Materials Center Director that the activities of the job in school A would be the same as those in school B. More often than not they were considerably different. Or again, in terms of the second phenomenon, it was not uncommon to find that many of the activities performed in say a job titled Media Technician in school C were virtually identical with those performed in school D in a job titled Media Coordinator.

Because of this lack of stability in job titles, and in order to provide a more powerful organizational structure for grouping job action descriptors, two independent but coordinated efforts were undertaken. One effort, employing clustering methodologies, sought to determine broad areas of responsibilities that media personnel assume in performing their jobs. The other effort dealt with developing a logical structure which would define the functions that are carried out by media personnel in performing their jobs. (These efforts are more fully described in detail in the Media Guidelines Final Report.)

What resulted, therefore, were two broad dimensions, rather than job titles, around which to group job activity descriptors. These two dimensions form a matrix which is shown in Figure 3. (This matrix will be recognized as being formed by two of the three major dimensions illustrated in Figure 1.) Activity descriptors have been listed first according to the responsibility grouping they represent, and second according to the function they represent.

The listings should be considered as a resource tool in the fullest sense and are not intended to constrain the user in any way.

Responsibility Groupings Section

Six categories make up the responsibility groupings: directive-administrative, professional, artistic-production, technical, clerical, and manual. Consecutive numbering of cells in Figure 3 has been done to permit quick and easy referencing to the subsequent listing of descriptors.

RESPONSIBILITY GROUPINGS	FUNCTIONAL GROUPINGS								
	Research and Development	Evaluation	Design	Production	Logistics	Utilization	Organizational Management	Information Management	Personnel Management
Directive-Administrative	1	2	3	4	5	6	7	8	9
Professional	10	11	12	13	14	15	16	17	18
Artistic-Production	19	20	21	22	23	24	25	26	27
Technical	28	29	30	31	32	33	34	35	36
Clerical	37	38	39	40	41	42	43	44	45
Manual	46	47	48	49	50	51	52	53	54

Figure 3. Responsibility Groupings by Functions Matrix

For example, in using the responsibility groupings dimension to locate job action descriptors pertinent to directive-administrative responsibilities of media specialists, all cells in the top row of Figure 3, i.e., cells one through nine, become involved. The Table of Contents indicates that activity descriptors for cells one through nine, directive-administrative responsibility descriptors, are found on pages 7 to 35. The row of cells for each of the other responsibility groupings is organized in a similar manner.

In order to provide for greater flexibility, activity descriptors for each responsibility grouping have been further refined by grouping them according to their functional relationship. For example, if one is interested in reviewing activity descriptors pertinent to directive-administrative responsibilities but specific to the function of design, the intersect of these two dimensions, which in this case is cell 3, gives the desired information. (Note: The reader should realize that the data base for both the foregoing responsibility groupings section and the following functions section is the same, i.e., descriptions of what media personnel actually do in their jobs. However, differential treatment of the data for each section was made. In the responsibility groupings section, activity descriptors in their fullest minutiae were retained in order that program planners could review the many details currently found in various job responsibilities. In contrast, activity descriptors in the functions section have been compressed and synthesized to present just the most pertinent information relevant to each function without the distraction of the minutiae.)

Function Section

Categories related to the nine functions shown in figure 3 make up this section of Part III. Job activities related to any one of these functions can be reviewed by turning to the appropriate pages which contain the desired category. The Table of Contents for this part of the Manual references all functional categories.

Jobs are seldom so specialized that a person works in only one functional area. However, consideration of the activities involved in a single function offers a convenient approach to reviewing current staffing assignments, planning increased job specialization and tailoring the design of instruction to meet specific job needs.

Functional listings are headed by hypothetical titles, i.e., The Media Researcher, The Instructional Designer, etc., to assist the reader in orienting his thinking toward job specialization rather than abstract functions.

DATA LISTING BY RESPONSIBILITY GROUPING

CELL 1: DIRECTIVE-ADMINISTRATIVE — RESEARCH

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Research.

Translates other's ideas into product terms

Works alone or with others to develop a general strategy or plan to produce a desired product

Identifies timeline for completion of activities

Develops proposal budget

Writes proposal

Searches for funding source

Negotiates contracts with funding agencies

Identifies the activities crucial to project objectives

Develops techniques for observation and measurement

Designs data gathering instruments and treatments

Designs methods to test hypotheses

Contacts school districts with which to work

Identifies and hires staff

Redefines and re-focuses on funding contract terms

Changes direction of project if necessary

Assigns activities to staff

Trains staff to accomplish assigned activities

Initiates and supervises development of experimental material

Authorizes expenditure of all funds

Selects alternative project activities making revisions as necessary

Monitors all staff personnel insuring quality control

Handles public relations aspect of the project

Acts as project trouble shooter

Conducts studies on location

Cell 1: (con't.)

Collects data

Designs data analysis models

Works with computer programmers to develop specific programs for data analysis and to solve related problems

Supervises staff in performance of data analysis

Interprets data

Discusses analyses individually and in groups with both educators and computer programmers

Plans and initiates dissemination activities

Writes interim progress report

Sends reports to funding agency

Writes and edits final report

Decides on whether to write professional articles based on final report

CELL 2: DIRECTIVE-ADMINISTRATIVE -- EVALUATION

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Evaluation.

Determines needs of the library (or AV Center) based on personal experience and judgment

Analyzes needs of deficient areas

Selects equipment and/or materials for preview

Requisitions preview materials

Maintains checklists to standardize previewing procedures

Obtains materials or equipment for preview

Previews all materials initially

Evaluates materials in terms of technical quality and applicability to curriculum

Writes and synthesizes evaluation statements

Selects faculty evaluators from those whose interests would be in the area of the acquisitions

Maintains file with listings of evaluators by name, subject specialty and grade level

Invites faculty to media center (or library)

Schedules monthly preview sessions

Books preview materials out to evaluators

Collects evaluation reports

Reviews teachers' recommendations

Reviews materials labeled "Urgent to Purchase" to confirm evaluators' reports

Reviews materials not selected for purchase to compare with evaluators' reports

Tabulates and consolidates evaluation reports

Brings evaluators together

Leads discussions of evaluation reports with faculty

Cell 2: (con't.)

Works with faculty and students to evaluate materials

Tests each item orally to see if it meets objectives

Judges materials on basis of student and faculty reactions

Insures proper handling and operation of preview materials or equipment

Tests materials in actual use prior to final decision

Decides upon selection or rejection of materials based on value and cost

Writes final recommendation for purchase

Writes annotation and describes materials

Sends annotation and evaluative reactions to producers

CELL 3: DIRECTIVE-ADMINISTRATIVE -- DESIGN

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Design.

Brainstorms with interested persons to help them identify needs and initiate possible solutions

Makes hypotheses

Consults with specialists

Revises ideas regarding design

Draws up specifications

Finalizes design

Confers with requester to determine the needs, facilities required and facilities available

Consults with department heads or other specialists to determine required materials and services

Lays out plan of operation

Recommends procedures and methods

Writes proposal

Hires staff

Acts as advisor

Designs management systems

Finds potential clients

Ascertains what potential client can spend

Interacts with client

Explains the design of the product to client

Presents plans for approval

Obtains necessary design materials

CELL 4: DIRECTIVE-ADMINISTRATIVE -- PRODUCTION

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Production.

Studies work request to determine whether or not request can be met in house

Visits requester to elaborate on objectives

Prices product

Determines course of action

Orders special materials if required

Hires necessary staff to provide required services

Establishes production schedule

Establishes priorities for all production aspects

Delegates authority and responsibility for parts of production

Supervises staff activities and all aspects of production

Procurement of programs for television

Secures broadcast time from radio station

Outlines and writes scripts and introductions to publications

Prepares storyboards

Determines specifications for motion picture production, i.e., length, sound or silent, black and white or color, etc.

Advises on scenes to be photographed

Works with artist on illustrative aspects

Modifies visuals if necessary

Selects cover from artist's sketches

Selects format and organization for printing

Edits rough drafts

Assists in all aspects of production, i.e., typing, collating, binding and printing

Cell 4: (con't.)

Writes brief description of educational radio program

Supervises television production

Coordinates script duplication

Interacts with customer to inform him of production progress

Updates existing services

Checks progress of production

Advises on approaching deadlines

Tries out prototype production

Elicits opinion on the utility of the prototype

Evaluates production to insure adherence to specifications

Obtains final evaluation from consultants and subject matter specialists

Submits dummies to commercial printers for informal bids

Initiates requisition for payment to commercial printers

Approves finished product

Works with teachers in implementing product

Coordinates distribution or circulation of product

Arranges for duplication of materials in quantities desired

Determines most appropriate mode of shipment

Ships materials

Submits bills for payment

Follows-up with requester to insure satisfaction

CELL 5: DIRECTIVE-ADMINISTRATIVE -- LOGISTICS

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Logistics.

Studies descriptive material on media considering grade level and subject matter area

Reviews new items as they become available

Selects items appropriate to the school curriculum

Initiates school purchase requisitions

Determines which districts will participate in cooperative buying of equipment

Makes composite lists of participants

Receives school purchase requests and compiles them by contractor and school

Evaluates requests by considering: request in relation to available money; duplication; need; acceptability; and quality in terms of the market

Consolidates teachers evaluations of all items ordered for review

Writes summary of all equipment and material requested

Develops school buying list

Reports to county school board concerning costs of cooperative purchasing program

Sends approved buying list to schools

Consolidates all school requests to send a single request to each contractor

Establishes booking and cataloging procedures that are compatible with county procedures

Recommends award of contracts to intermediate educational district board

Informs school districts of award of contract

Studies manufacturers' samples

Reads professional journal reviews of media

Establishes specifications for audio-visual items to be purchased

Approves or disapproves staff purchase requests

Cell 5: (con't.)

Designates type and quantity of equipment to meet needs

Prepares purchase request to send to selected bidders

Opens and records bids

Identifies low bidders

Confirms that bids meet specifications

Writes letters to bidders who do not meet specifications

Sends purchase orders to selected vendors

Maintains acquisitions and business transactions records

Insures receipt of materials by examining shipping documents and items received

Reports damaged equipment to carrier

Signs invoices approving payment

Assists and advises in planning for use of new equipment

Maintains identification information on all materials

Puts items out for bids through advertisements in newspapers and mailings to desired contractors

Conducts public bid openings at advertised time

Compares and tabulates bids

Surveys organization's work and service

Formulates organizational standards based upon experience, training requirements of customers, and national and state standards

Establishes organizational goals

Judges achievement of goals by looking at historical records and comparing with current data

Suggests modifications in current physical facilities and designs new facilities

Analyzes work and traffic flow in planning media facilities

Monitors distribution operation

Cell 5: (con't.)

Develops flow chart to assist in dividing work

Develops task analysis for each work division or function

Writes job descriptions

Advertises for job applicants

Screens applicants

Hires necessary personnel

Instructs new employees as to their job role

Observes performance, attitudes and satisfaction in job situation

Observes efficiency of personnel

Communicates organizational goals to staff

Conducts weekly staff meetings for free exchange of ideas, plans and details of operation

Discusses, assists, answers questions, instructs, suggests improvements and solves personal problems

Gives and accepts constructive criticism freely

Delegates responsibility and authority

Advises other school districts on arrangements of media centers, materials needed and sources for these materials

Assists in obtaining materials

Instructs students in the use of the facilities

Plans and revises school delivery schedules and routes

Test drives delivery routes

Selects most used periodicals to be preserved on micro film

Rents warehouse space

Oversees shipping operations

Supervises print material processing

Studies booking schedule for the following day

Cell 5: (con't.)

Corrects mistakes made in booking

Prepares delivery schedules sheet

Files audio-visual request forms by sending date and route

Locates missing materials

Maintains file of "overdue" materials by school and route

Establishes subject categories

Types master cards

Orders requested print material

Unpacks and processes books

Organizes storage area for rapid retrieval

Purchases commercial indexes

Handles telephone complaints

Telephones users to expedite return of materials

Assigns equipment operators considering their schedule and ability

Insures that proper equipment, materials and a capable operator are in the appropriate place at time designated

Supervises print material processing by observing, suggesting, advising and approving

Attends book review meetings

Cell 6: Directive-Administrative -- Utilization

In the Directive-Administrative grouping of tasks, no activities were found to be performed for the purpose of Utilization.

CELL 7: DIRECTIVE-ADMINISTRATIVE -- ORGANIZATIONAL MANAGEMENT

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Organizational Management.

Determines objectives for the organization

Determines needs to meet objectives, i.e., personnel, equipment, space, budget, etc.

Writes specifications for equipment, materials, processes and services

Observes the needs and requirements of the organization from the day-to-day operation

Considers constraints, i.e., money, facilities, staff and methodologies

Identifies current weaknesses in structure

Formulates tentative functions for the organization

Defines functions of key personnel

Defines functions of self

Formulates tentative structures and operations to facilitate functions

Implements structure and operation for test

Assesses workability of structure and operation by observing, listening to feedback, and making formal assessments

Revises structure and operation as appropriate

Uses matrix to illustrate what is currently happening

Revises matrix in view of overcoming weaknesses and meeting goals and objectives

Prepares visuals showing structure and operation capable of giving the best accomplishment of functions within constraints

Drafts policy statements that summarize the finalized functions, structures and operations and the rationale which support them

Establishes long and short-term goals

Considers staff's strengths, weaknesses and present capabilities

Defines lines of communication

Cell 7: (con't.)

Express organization's overall philosophy

Discusses areas in which organization should have an impact

Describes organization's capabilities to outside agencies

Identifies services of other agencies which could aid in meeting the organization's objectives

Plans liaison in terms of what the outside agency could provide to aid in meeting the organization's objective

Negotiates with other agencies to trade services or to buy services

Considers how the facilities will assist in the accomplishing of the goals of the organization

Plans new facilities based on number of staff, number of activities and staff desires

Considers plans in light of available physical resources and fiscal resources

Develops policy for staff officing -- for example, one man to one office

Considers the functions of personality and work activities

Negotiates for required space

Negotiates costs of facilities

Approves plans

Coordinates the capabilities of the organization

Establishes dollar amounts on these services

Compares budget and needs with organizations of similar size

Justifies budget items if required

Evaluates structure and operation of organization in terms of their effectiveness in achieving functions

Studies problem areas and trends

Considers new developments from field conferences, professional journals, salesmen, and trade journals

Cell 7: (con't.)

Examines previous year's budget

Considers budget, item by item, deciding on the necessity of each in running an adequate operation

Requires colleagues to submit sub-budgets

Approves or disapproves of some budgets

Consolidates sub-budgets

Adds approved program improvements to compilations

Makes adjustments in budgets to allow for cuts

Prepares budget on the basis of the appropriations and objectives to be met

Develops budget calendar based on state legal requirements

Categories information into formal document including justification of all line items

Presents budget orally and in writing to planning and finance committee

Advises appropriate officials of budgetary priorities

Receives approved budget document

Controls department budget by approving or disapproving expenditures

Supervises expenditures in reference to inventory control and remaining funds

Writes requisitions for the expenditure of budgeted funds

Allocates funds to the staff as appropriate

Monitors federal fund accounts, approves expenditures within federal projects and prepares and submits claim forms

Makes minor budget adjustments within categories

Monitors income accounts to determine that they are up to expectations

Monitors expenditures to insure that major categories are not overspent

Maintains knowledge of outside revenue sources, both for the present and the future

Plans strategy to obtain grant

Cell 7: (con't.)

Commits organization to project by accepting grant

Categorizes budget requests in standard format

Runs a cost analysis of all maintenance and repair contracts to insure that time spent and charges are adequate

Prepares purchase orders

Signs purchase orders

Determines suggested amount of each item by referring to catalogues, price lists, etc.

Prepares monthly financial statements

Authorizes requisitions

Reads and collects data on trends in the media field

Attends meetings to obtain and disseminate information

Approves and releases publicity to information services on forthcoming programs

Greets visitors upon arrival, houses them, orients them to location of facilities, entertainment, etc.

Organizes and schedules instructional aide program

Interviews teacher-aide applicants

Arranges student placement for intern service

Selects instructors for teacher aide program

Assists instructors in lesson-planning

Teaches audio-visual orientation in instructional aide program

Orders materials and schedules equipment

Makes evaluation visits to each school during the teacher aide internship

Determines vacancies and writes recommendations

Places students in jobs

Confers with television producer-director to decide approach, objectives, format and talent for TV program

Cell 7: (con't.)

Appoints committees to develop plans and objectives for new television series

Acts as leader to assist group in focusing on direction of effort

Explains to group what is involved in an educational television production

Assigns television program to the selected producer-director and discusses the program with him

Acts as part of the television production team, i.e., as curriculum director or TV director, teacher or writer

Supervises typing and distribution of story board to studio publicity people, program manager and producer-director

Consults with the producer-director as to set and credit requirements

Distributes copies of story board to people involved in television production

Selects talent based on the interests of the public and various views of the audience

Confers with talent to discuss television production

Acts as a buffer to help maintain the "calm and cool" between talent and director

Schedules studio time for production

Makes decisions on production contingencies

Recommends program changes and equipment purchases

Provides necessary explanations to the production team

Approves video tape erasures by traffic manager

Writes and disseminates short descriptions of programs

Advises the producer-director if he requests advice

Supervises video taping

Establishes preview conferences for existing television series

Notifies school district of exact presentation date for educational television

Cell 7: (con't.)

Secures free time from radio stations

Duplicates tapes for distribution to the schools

Sends magnetic tapes to radio stations for broadcast

Arranges graduation ceremony

Interacts with staff members

Works with staff, if requested, to make expenses fit income

Answers questions, solves problems

Maintains knowledge of staff's needs and desires

Meets with staff to discuss priorities, needs for equipment and services and to determine internal needs

Confers with department heads to determine type of services needed

Confers with director as to emphasis and future needs of the organization

Hires additional personnel when required

Schedules meetings and sends out notices

Discusses distribution problems with principal or superintendent

Conducts periodic meetings with building coordinators

Serves as consultant at monthly meetings

Studies agenda for policy setting meetings

Adds agenda items

Writes or mentally outlines thoughts pertaining to agenda items

Reviews position papers, conversations and professional writing relative to agenda items

Attends policy-setting meetings

Discusses agenda items

Initiates topics during meetings if they are likely to be policy issues

Discusses issues in terms of objectives and structure

Confers with group to arrive at decisions

Cell 7: (con't.)

Schedules work in relation to meeting results

Attends conferences

Discusses with director persons to be invited, suggested locales for the conference, space and facilities required and stipends to be paid

Confirms location for conference and the availability of necessary facilities, i.e., electrical outlets, blackboards, darkening curtains and refreshments

Prepares conference agenda

Prepares and sends invitations and reply cards to participants

Sees that name cards are prepared if appropriate

Welcomes and orients participants

Confers with clients to initiate projects

Conceptualizes a project

Plans sources for obtaining necessary information

Draws up project plans

Establishes flexible objectives and specific procedures

Proposes time schedule

Plans logistic and implementation activities

Plans out the needs and roles of staff

Anticipates technical problems involved in project

Plans changes in the direction of the project

Produces a prototype feasibility study

Obtains permission to use various materials

Conducts meetings to indicate progress

Exercises a quality-control function

Makes recommendations to project director

Prepares final report interpreting evaluation data

Cell 7: (con't.)

Represents projects in briefings to management and customer

Negotiates with schools to sell preventive maintenance service

Presents contract to school superintendent for signature

Schedules maintenance work

Studies delivery area, locates schools and determines the order in which to deliver

Plans most economical and practical route considering time, school, location, traffic and school schedules

Personally test-drives new route

Periodically evaluates courier service to make adjustments as necessary

Draws circuit diagrams

Organizes programs

Visits programs on location

Obtains resource personnel

Recommends program changes

Evaluates all phases of program through informal discussion

Considers overall service in light of feedback, cost analysis, etc.

Plans future operation having plans ready to implement when current procedures are running smoothly

Establishes working schedule based on required services

Visits, frequently, to oversee operation

Oversees periodic inventories of the departments

Investigates any major shortages

Reports losses or damage to appropriate persons and/or insurance companies

Discusses alternatives with person requesting service

Prepares cost estimate

Cell 7: (con't.)

Finalizes agreements with customer considering cost of service desired and resources

Makes hypotheses about market, number and materials

Compares prototype with other products of a similar nature

Decides as to whether the product is competitive

Considers copyright aspects and costs

CELL 8: DIRECTIVE-ADMINISTRATIVE — INFORMATION MANAGEMENT

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Information Management.

Describes county media services to general public, teachers and administrators who use these services

Conducts tours of the facilities

Greets visitors

Interprets information concerns of visitors and acts accordingly

Presents an orientation to the work of the organization and each department within it

Provides visitors with handouts and visuals

Makes a one-half hour informal lecture-type presentation to visitors

Answers any questions

Sells public on county media programs

Visits other schools

Assesses details of problems other schools might encounter and suggests solutions

Promotes a favorable image for the media center and sells the idea of using media

Observes and studies school to select media center of the month

Indicates general organization of newsletter to graphic artist

Approves newsletter layout and art

Solicits articles for newsletter

Collects items for inclusion in newsletter

Writes articles for newsletter

Proofreads newsletter articles

Circulates newsletter

Writes and circulates bulletins to administrators and media coordinators

Confers with requester(s) in planning and conducting workshops and institutes

Cell 8: (con't.)

Selects chairmen and committee members to plan and conduct media workshop or institute

Establishes schedule for reports by chairmen

Studies target population to include demographic data, cultural mixes, key individuals, and influential institutions and people

Studies special needs of target audience and bolsters personal knowledge in those areas

Determines area of crises or priorities which need attending

Develops and specifies behavioral objectives

Designs activities to meet objectives

Establishes evaluation procedures for institute

Establishes time-schedule for media institute

Approves or disapproves of institute as planned

Allocates money for institute

Explains to teachers how much training will be given and asks their agreement to undergo training

Advises on costs of producing materials and format of messages

Negotiates with colleges and universities to give college credit, and with educational organizations to give inservice credit for institute training

Outlines format for institute

Plans structure of subject matter

Confers with director as to logistics involved

Selects institute staff

Establishes staff responsibilities

Reviews characteristics of participants

Studies special needs of target audience

Reviews specific objectives

Designs and/or selects materials

Cell 8: (con't.)

Informs speakers of schedules and desired subject matter

Notifies inservice training participants of dates, places, and so forth

Establishes course agenda to meet objectives

Brainstorms subject matter to identify key concepts

Decides upon major topic to present and the sequence in which to present it

Plans lessons and writes a syllabus for each

Packages institute materials

Schedules facilities for inservice media courses

Obtains necessary materials and equipment, checks transportation, electrical outlets and other details for inservice media courses

Prepares presentation notes

Dry runs institute presentation

Critiques presentation with staff

Establishes working atmosphere for institute

Makes institute presentations

Teaches inservice course individualizing as much as possible

Requests various participants to make presentations

Answers requests for assistance

Answers questions about the use of the study guides

Ends presentations when instructors feel that no more is to be gained

Implements evaluation plan

Interprets planned observations

Critiques institute with participants

Evaluates effectiveness by considering attendance, interest shown, and written critiques

Prepares written recommendation for future workshops

Cell 8: (con't.)

Accepts telephone or personal requests for presentations of multi-media production

Arranges for and schedules assistant's time

Obtains equipment and materials to be used in the presentation

Schedules personal time and makes final arrangements for presenting the production

Delivers equipment and materials to site where multi-media presentation will be made

Confirms that all facilities are satisfactory

Sets up equipment

Makes introductory statement to audience concerning the presentation

Runs multi-media presentation

Elicits discussion in terms of presentation and objectives of groups

Returns equipment after the presentation

Represents the library at various college department staff meetings

Uses word-of-mouth advertising to further faculty-library relations

Notifies faculty of library acquisitions

Lets faculty know that library services are for their benefit

Designs and presents laboratory informational programs

Designs and presents a series of informational presentations to legislators and congressmen

Maintains strong cooperative ties with other educational organizations such as state departments, colleges and universities

Makes presentations to both professional and lay groups

Stresses public service aspect of county programs both orally and in writing

Provides school districts with current information so they can make better use of county media programs

Designs and produces promotional publications

Cell 8: (con't.)

Analyzes costs and budget for dissemination

Initiates promotional programs

Evaluates current promotional program annually by supplying evaluation team with all currently used promotional material

Selects most feasible means of dissemination

Selects producer to disseminate products

Designs promotional activities for various products

Organizes county-wide teachers' meetings

Selects audience

Makes presentations at conferences on the utilization of educational television

Oversees arrangements for conference rooms, refreshments and so forth

Coordinates conference financial matters and activities

Prepares materials for handouts

Plans strategy and purpose and develops programs to meet conference goals

Attends professional meetings

Writes technical reports

Studies professional journals, advertising material and so forth to gain background knowledge

Identifies possible uses for various projects

Organizes afternoon classes on repair, maintenance, cataloging, selection and ordering procedures

Coordinates distribution of study guides to all schools

Presents report findings to staff

Trains teachers to cooperate in research projects

Brainstorms with staff to formulate possible solutions to problems

CELL 9: DIRECTIVE-ADMINISTRATIVE -- PERSONNEL MANAGEMENT

In the Directive-Administrative grouping of tasks, the following activities were found to be performed for the purpose of Personnel Management.

Analyzes operations and procedures in light of personnel requirements

Writes new job descriptions and estimates number of new personnel required

Advertises unfilled position(s) through appropriate agencies to media field in general

Seeks out possible job applicants at professional conferences

Reviews job applicant's references and application form

Interviews job applicants considering the skills required for the job, the applicant's background, training and history of previous jobs

Refers job candidate to second interviewer in order to compare reactions

Compares abilities of various job applicants

Evaluates job applicant's performance ability and attitudes toward job

Selects and hires the best job applicants

Maintains file on all job applicants

Trains newly hired personnel or assigns to trainer

Observes training of newly-hired employee

Evaluates new employee's progress and capabilities and writes personnel evaluation

Defines roles of various personnel

Defines personnel roles in relation to particular projects

Assigns projects to various personnel

Delegates responsibility and authority for projects to employee

Delegates supervisory duty to an employee when sufficient degree of competence has been observed

Assigns and redirects other work

Departmentalizes the organization for efficiency

Makes decisions as to emphases, priorities, and time scheduling of employees

Cell 9: (con't.)

Maintains procedural manual

Maintains organizational balance between service and self-directed activities

Observes personnel in performance of their assigned functions

Observes personnel in order to judge production capability of organization

Monitors individual performance to determine social reactions and frustration tolerances

Interacts continuously with personnel to devise more effective and efficient activities

Suggests new methods for accomplishing various tasks

Conducts periodic coordinating sessions to establish new priorities

Instructs, demonstrates and answers questions concerning new duties, improved work methods and good public relations habits

Arranges for service of subject matter specialists when needed

Confers with consultants (subject matter experts) to invite discussion of problem areas and possible solutions

Evaluates consultant's strategies

Plans staff meeting agendas

Presents information, problems and solutions at staff meetings for discussion

Describes to higher management the capabilities of employees

Observes activity of all personnel and evaluates performance in terms of records, deadlines and production

Imparts and receives information concerning personnel performance

Attends to customer evaluations of employees

Notes outstanding personnel performance

Identifies person with most capability to assume supervisory role

Discusses employee's deficiencies with him and suggests corrective actions when necessary

Discusses impending discharge with employee in advance

Cell 9: (con't.)

Considers employee well-being by: communicating with employees; treating each employee as an individual; assisting in the solution of employee personal problems; and seeing that employees obtain adequate salaries

Attends presentations given by employees

Elicits employee's views on new methods

Interacts with employees to solve problems

Interprets organizational policy for personnel

Supervises directly when required, but relaxes supervision as employee capabilities increase

Specifies nature of information employees are responsible for relating to supervisor

Develops rapport and confers with the state board of education, administrators, and/or other individuals from various organizations

CELL 10: PROFESSIONAL -- RESEARCH

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Research.

Visualizes a gap in the media field

Seeks out research ideas

Expands and delimits ideas into projects

Reads what others have done in the field

Defines research parameters

Formulates many tentative solutions

Attempts to delimit the problem

Writes proposals

Formulates objectives

Organizes procedures to achieve objectives

Works for or responds to funding source

Receives responsibility from the funding source

Organizes project staff

Establishes time-line for research projects

Defines sub-jobs involved

Obtains equipment or materials needed

Arranges visiting schedules

Researches project costs

Carries out cost effectiveness surveys

Makes system analysis chart

Interviews via telephone

Seeks out information which will support or reject tentative solutions, or will suggest alternate solutions to the problem

Evaluates proposed solutions based on information

Generates new solutions revising and discarding previous ones

Cell 10: (con't.)

Synthesizes proposed solutions and visualizes through a tentative model

Runs reality tests

Checks reality tests against data to see if it explains or takes into account known information

Revises solutions based on input from reality tests

Develops final model

Develops behavioral scales

Collects data by administering behavioral scales

Writes and administers attitude scales

Does empirical work with students

Correlates attitudes scales and observation scales with student behavior

Works out coding systems

Develops formats for data analysis (computer programs)

Analyzes data

Evaluates project

Writes progress report

Generates instructional strategies based on individual experience and learning theories

Writes final reports

Writes for professional journals

Visits clients and entertains clients to establish rapport

CELL 11: PROFESSIONAL -- EVALUATION

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Evaluation.

Studies professional journal literature on individualized instruction and evaluation

Studies evaluation models and theories that are already being used and judges their appropriateness to the present situation

Determines project constraints; i.e., time-limits, manageability, source of information, data to be obtained and costs

Selects people to serve on evaluation committees

Confers with funding agencies, administrators, teachers, staff members, colleagues and students as to their goals

Explains objectives of field-tests noting questions asked

Identifies the target audience

Determines the kinds of decisions the target audience needs

Establishes value parameters

Sets priorities among values

Selects acceptable indicators

Visualizes parameters, priorities and indicators, mathematically, physically and graphically

Tests model's usability for particular project

Tests model's general usability for other projects

Writes evaluation items to measure objectives

Confers with colleagues as to validity of items

Revises items as necessary

Interprets data in view of requester's objectives

Develops new instruments if data interpretation indicates a need for further evaluation

Evaluates responses to determine if materials are adequate

Arranges for administration of instruments, field test, personnel and sights

Cell 11: (con't.)

Assembles target population

Administers post-tests

Formulates new models as required

Writes recommended evaluation procedures

Analyzes results to decide upon course of action

Develops tests

Administers tests to target population

Establishes data processing and translation procedures

Summarizes responses and studies stated objectives

Decides whether or not the program meets its objective to an adequate degree

Fills in gaps, either visually or verbally if evaluation package proves to be inadequate in any area

Makes recommendations based on results to curriculum committee

Writes final report

Determines data distribution plans

Delivers manuscript to printer

Presents instructional package

Arranges date and locations for evaluation efforts throughout the year

Screens all literature for new materials and equipment

Talks with factory representatives and studies brochures

Selects and obtains new items which may have value for preview

Orders selected television programs by telegram

Schedules television air-time based on time of day and audience, cost and subject interest-level

Participates in staff evaluation of all new items

Watches demonstrations of new items

Cell 11: (con't.)

Compares new equipment with equipment on hand on cost-efficiency basis

Conducts informal evaluation through discussion

Conducts formal evaluation using check list and rating scales

Devises television evaluation instrument

Makes up frame error matrix

Analyzes frame error matrix

Supervises distribution of instruments, return of instruments and compilation of results

CELL 12: PROFESSIONAL -- DESIGN

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Design.

Accomplishes basic research on programmed instruction

Suggests instructional strategies to meet problems considering packaging, content and audience constraints

Analyzes subject matter to determine structure

Identifies weaknesses in current materials

Specifies both intermediate and terminal objectives considering restraints of: realistic possibilities of achievement, licensing instructions and production capability

Defines sponsors and target audience

Selects general content areas to be included

Creates a hierarchy of objectives

Develops the strategy to be used in the form outlines and flow charts

Develops the format as suggested by the subject

Formulates generally what will be included in an instructional program

Writes criterion tests

Compares presentation devices deciding on mode of presentation

Considers media to be used and sequence of treatment

Develops production story board outlining visuals, sound, and other sensory input

Cost-estimates development of product

Assigns program and specifications to production department

Writes objectives or specifications for computer-assisted instructional systems

Translates general project objectives into specific behavioral objectives

Visualizes general format of instructional management systems

Prepares experimental computer-assisted instruction materials in particular subject matter areas

Cell 12: (con't.)

Reconciles conflicting views of subject matter experts

Delimits the problem area with clients

Studies professional journals, commercial brochures, and other literature to discover solutions to problems, to gain an understanding of learning theories and to identify current computer systems that are assisting instruction

Studies procedures, methodology and findings of related projects

Reviews existing computer-assisted instruction manuals and programmed language manuals to determine the teaching strategies employed

Trys out computer-assisted instruction programs on small groups of students

Conducts and analyzes post tests

Confers with staff during design of new buildings to determine audio visual requirements

Identifies personal design goals and teaching strategies

Determines procedures that can be used to improve student behavior

Builds decision models based on a review of the literature

Conducts field tests of tutorial strategies that have been incorporated into a computer program

Derives formal rules of tutorial behavior based on behaviors that have been effective

Discusses with teachers possible procedures to be used to improve student behavior

Selects tutors to work with programs

Checks to see how teacher's performance has been modified

Defines the role of the company in relation to the client

Discusses ideas in depth with associates

Calls in professional consultants and confers with them to draft specifications

Recommends preferred solutions to administration

Cell 12: (con't.)

Advises staff when changes are made in plans

Gains an understanding of the political aspects of projects

Technically evaluates equipment and materials to see if they meet specifications

Confers with students and teachers to isolate problems encountered in individualizing instruction

Explains to customers what is possible given a set amount of time and money

Selects and persuades personnel to participate in multi-media productions

Visits and corresponds with others working on similar problems

Orders and maintains an inventory of forms

Uses evaluation data as input for material's development

Corresponds with manufacturers

Delivers specifications to administration for placing out for bid

Advises on selection or approval of bid

Writes proposals for funds with which to operationalize system

Studies plans to insure inclusion of required facilities, i.e., outlets, screens and blackout curtains

Considers availability of effective talent

CELL 13: PROFESSIONAL -- PRODUCTION

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Production.

Confers with requester to define the nature of the request with such background information as kind of class, number in class, objectives, location and instructional competency

Brainstorms with client and artists to determine best ways of communicating the idea

Decides upon what medium to use

Develops a visual plan, sketch and/or script for a model

Calls in production technician during the planning

Confers with client for approval of roughs

Assigns final prototype to production people

Requires only operating performance of prototype equipment, disregards appearances per se

Selects necessary production hardware

Obtains facilities

Trains requester to produce material or operate equipment

Hires appropriate people such as teachers for designing materials, professional computer programmers, educational researchers and general support persons

Delivers prototype to client for approval

Computes costs of prototype

Delegates final production to qualified staff

Supervises staff by establishing deadlines, deciding on directions of efforts, delegating work, coordinating efforts, allocating expenditures of funds and disseminating information

Finds shooting locations

Writes shooting script

Secures approval of client on shooting script

Writes audio script

Cell 13: (con't.)

Edits script for content, sequence and clarity

Proofreads typing and script

Writes video outline for photographic consultant

Directs fill-in shots

Rents editing devices

Obtains approval for edited footage

Visits and corresponds with others working on similar problems

Checks and approves final art work, audio, video and synchronization

Reports production results

Disseminates production results through professional journals and/or consultant jobs

Informally follows up with requester

Designs equipment incorporating new developments to meet changing requirements and objectives

Determines the priority for the exchange of out-dated equipment

Determines if production capability is adequate to manufacture equipment

Maintains liaison with faculty representatives and contemporaries

Writes outlines for computer-assisted instruction lessons

Studies objectives and subject matter to fully understand what must be measured

Considers the age span of groups to be evaluated

Decides upon most appropriate form for questions

Devises questions and possible responses

Revises materials as needed

Writes introduction to instructional packages with directions on how to use

Codes instructional programs

Cell 13: (con't.)

Sends instructional program to be printed

Delivers instructional programs to be printed

Field tests new media systems

Evaluates systems against objectives stated and in the light of expected growth

Establishes schedule for the implementation of new media systems

Writes to film and slide producers to obtain permission to use their materials

Sets up facilities for review panels

Refers customer requests to the appropriate staff members

Forms and confers with steering committees

Offers solutions to staff problems

Trains staff to understand computer theory and its relationship to the objectives of the project

Gathers specific information about facilities that would be acceptable for field trips

CELL 14: PROFESSIONAL -- LOGISTICS

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Logistics.

Reads professional journals and uses personal judgment to broaden the materials and equipment collection in specific areas

Previews non-print materials and equipment prior to purchase

Discusses merits of materials with salesmen

Discusses with faculty members their requirements for books and audio-visual materials

Evaluates the adequacy of present materials and equipment collection on the basis of teachers' requests and requests that cannot be filled

Uses personal judgment in selecting materials which may be useful to the customer

Makes decision to purchase notifying secretary to order materials

Selects source, cost, speed of service and availability of publisher -- using jobber for mass purchases

Approves and signs purchase orders

Sends purchase order to business office

Inventories to replace lost or damaged items

Conducts and collects teacher's evaluations of materials

Relies on personal judgment as to the value of the materials

Confers with colleagues to verify evaluation information

Examines and test runs materials to decide as to the requirement for repair

Refers to film-rating sheets to ascertain physical condition and evaluation of content

Compiles film-rating sheets by call number

Decides on whether material can be used in its present condition

Alerts teachers to problems that might result from running films with discontinuities

Cell 14: (con't.)

Assists with customers' requests, questioning and helping the customer to define and clarify his objectives

Searches reference works and indices

Packages and sends references which can leave the library, making photostats of those that cannot

Checks to determine if material requested is available or on order

CELL 15: PROFESSIONAL -- UTILIZATION

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Utilization.

Distributes text workbooks to each student and explains design of text

Makes presentation in sequence of text

Informs students to take notes in text to amplify printed word

Informs students to complete workbook exercises

Answers questions and assists students individually or in a group to solve problems presented in text

Distributes student hand outs

Informs students to read hand outs

Answers questions concerning hand outs

Distributes graphic hand out at appropriate time during presentation

Explains purpose of graphic hand out

Assists students in using graphic hand outs

Evaluates student responses if appropriate

Draws and letters on metal chalkboard with regular chalk to illustrate lecture

Draws and letters on metal chalkboard with florescent chalk to illustrate lecture

Draws and letters on metal chalkboard with chalk that marks in white under normal room light and floresces under black light in color to illustrate lecture

Uses aircraft-shaped cutouts with magnets on metal chalkboard to illustrate wind effect on aircraft headings and tracks

Prepares student to gain maximum from viewing projected materials

Uses plastic pointer to emphasize salient points on the projected image of the overhead projector

Writes, prints or draws on overhead projection as appropriate

Pre-sequences items on overhead slide as appropriate to subject matter then covers slide and uncovers items in sequence

Cell 15: (con't.)

Uses "ghost writing" for dramatic effect

Projects materials on chalkboard and uses associated florescent and colored chalk

Places overhead projector at front of room

Sits at projector maintaining eye-contact with students

Uses titled screen and projector to eliminate key stoning

Previews motion pictures before each use

Prepares a film-guide sheet showing objectives, points to look for, summary questions and application activities

Prepares facility for viewing of motion picture by darkening room, arranging seating for maximum visibility and adjusting ventilation

Discusses subject matter with class arriving at important points

Writes important points on chalkboard

Projects film observing audience reactions

Discusses subject matter based on summary questions

Assigns follow-up activities

Uses tape recordings of good radio and telephone procedures for the entire class or for remedial individual study

Uses tape recording of pilot response recorded at 15 second intervals

Off-tunes pilot tape to obtain a sound similar to a radio transmission

Demonstrates use of radar scope by conducting a complete interception

Assists students to a high degree on early interception attempts withdrawing assistance gradually as students' proficiency increases

Uses checklist as guide in daily evaluation and critique of student's performance

Uses checklist to guide and score final evaluation

Assigns student to one of several simulated positions for the duration of an intercept problem

Cell 15: (con't.)

Conducts formal group briefing at the end of problem situation

Demonstrates use of radio-telephone, and radar scope during live aircraft interception

Cautions students on responsibilities and safety aspects

Monitors all student action

Sets up and tests out hardware prior to class

Combines lecture, group recordings and live demonstrations to accomplish training

Monitors student's performance using evaluation check-out based on task analysis

Writes questions about film for use in discussion

Discusses how film is related to curriculum

Shows different ways in which films can be used

Checks out and returns materials to the media center

Grades examination papers and notifies those who pass

Permanently files examination results

Pre-plans presentations based on instructional packages

Elicits student critiques of others

Monitors and discusses teachers' efforts

Confers with building coordinator to outline projectionist courses, including the type of equipment to be used, number of students, location and equipment on hand

Arrives at appropriate place on time

Counsels individual students who are having difficulty

Prepares and distributes license cards to those who pass projectionist course

Hands out media center catalog

Elicits information as to what kinds of films teachers want

Cell 15: (con't.)

Promotes county media center and film service

Judges effectiveness of projected material by class reaction and examination results

Administers written examinations

Selects appropriate films relative to curriculum

CELL 16: PROFESSIONAL -- ORGANIZATIONAL MANAGEMENT

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Organizational Management.

Establishes requirements for training

Organizes the teaching of small groups in media laboratory

Plans the use of integrated media approaches, independent study techniques and/or team teaching to facilitate subject matter presentation

Holds weekly critique with inservice student-teachers

Observes students' work in laboratory situation

Arranges for administering a performance-type final exam

Coordinates the activities of visiting teams

Coordinates the activities of the organization's staff

Designs criteria and procedures for the activities of visiting teams

Reviews the literature

Brainstorms with staff

Consults with experienced people

Designs criteria and procedures for systems analysis

Analyzes other organizations' operations

Selects team from outside to react to the analysis

Charges expenditures against account numbers

Prepares year-end reports as specified by the procedural manual

Writes final reports and bills for services

CELL 17: PROFESSIONAL -- INFORMATION MANAGEMENT

In the Professional grouping of tasks, the following activities were found to be performed for the purpose of Information Management.

Reviews a request for a proposal to focus on the specifics of the problem area and on the appropriateness of alternative procedures

Determines the need for a given project

Researches the literature to refresh knowledge in the problem area

Acquires proposal writing format and writes up rough draft of proposal

Considers budget, dissemination compliance, required signatures, deadlines, personnel and equipment

Assigns responsibility for the preparation of various sections of proposals

Selects proposal writing team

Analyzes media center's collection of books and materials in order to obtain funds for updating

Determines particular areas of need

Ascertains if needs can be made to fit the rules of federal grants

Obtains application forms and guidelines

Relates project objectives and material center objectives

Reviews and revises proposal's first draft and interacts with team members

Writes and re-writes rough drafts of proposals which are critiqued during weekly staff meetings

Incorporates peers' suggestions

Dictates or writes second draft in proper format

Turns document over to secretary for typing

Supervises final production of proposal

Reviews second draft editorially

Submits final draft for reproduction

Cell 17: (con't.)

Insures that proposals and final reports enhance the organizational image

Presents proposal to county school board for approval and specifies director's responsibilities

Selects subject for professional writing

Writes and structures an outline for an address

Determines nature of group and suggested topic

Designs or selects media to fit the presentation

Makes notes on key concepts

Plans and produces prototype materials for media courses

Writes lesson plans

Designs or collects any presentation material not on hand

Writes a course syllabus

Writes and administers examinations

Writes copy

Outlines copy for publication

Submits professional writing to peers for review

Sends memorandums to staff to inform them of media courses

Modifies presentation notes for future reference

Selects materials to be used with media courses producing them if necessary

Instructs secretary to type and distribute professional papers

Identifies intended impact of professional writing

Writes course objectives

Develops a training outline

Applies controls on expenditures

Obtains student operator's schedule to insure he is on payroll

Cell 17: (con't.)

Studies past programs, examines the need to establish priorities and considers funds available for inservice training

Determines facilities available, time, place and honorarium to be paid for giving addresses

Sets broad calendar of events to make plans based specifically on calendar

Announces media courses in bulletin or college catalogue

Returns materials and equipment to the media center

Assigns student operators to jobs where their competencies lie

Arranges for procurement of necessary laboratory space

Arranges for resource personnel to assist in teaching media-related courses

Secures appropriate equipment

Meets classes at appointed time

Assigns production tasks to students when they have demonstrated sufficient competency

Makes arrangements for discussion groups

Arranges for training sessions for all staff members concentrating on the specifics of time, place, equipment, etc.

Selects instructors for inservice courses

Approves visuals for publication

Specifies illustrations desired

Modifies copy and visuals if required

Informs artists or photographers of specifications for materials

Explains the responsibilities of the employee to the organization and of the organization to the employee

Assigns trainee as an assistant to a more experienced employee

Holds parties for the staff

Involves the staff in various projects

Cell 17: (con't.)

Interviews student-operator applicants and recommends to management those that should be hired

Confers with faculty to identify their media-related problems

Confers with building coordinators to outline short media courses considering the type of equipment, number of students to be taught, location and equipment on hand

Confers with resource personnel to clarify problems, to determine other studies which may have relevance, to obtain opinion on appropriate procedure and to explore possibilities for collaboration

Confers with director to determine time and place, subject matter to be covered and objectives of teacher aide program

Confers with staff members to select course content and establish emphasis for inservice media classes

Confers with director to obtain authorization for running a workshop

Shows customer commercial brochure's specifications to assist him in the selection of equipment

Assists customer in operating new equipment and in discovering possible materials use

Presents possible problem solutions to customer both written and orally

Explains research objectives and procedures to teachers

Holds and attends planning conferences

Presents to inservice teachers a description of services available from the library and audiovisual departments

Persuades school district personnel to attend conferences

Trouble-shoots equipment malfunction at the request of the teacher

Dry-runs presentations to check materials and equipment

Sets up equipment

Offers assistance in the clients use of equipment and facilities

Visits other media programs

Suggests ways to improve the use of media materials

Cell 17: (con't.)

Identifies commercially available materials in view of staff objectives informally testing materials in-house

Receives teaching assignment from director

Designs library courses in relation to the needs of the community and the students

Analyzes needs for a media-related course and seeks approval

Analyzes other courses to select a philosophy and approach

Researches the subject matter

Establishes sequence of instruction in the design of the learning experience

Plans learning activities

States objectives of the training program

Develops a theoretical task analysis based on observation

Confirms completeness of checklist by further observation

Analyzes tasks involved, divides tasks into sub goals and develops a sequence for sub goals

Writes behavioral objectives

Writes rough outline of means to attaining these objectives following a specific format

Allows for sufficient time devoted to each objective

Refines course outline based on evaluation

Outlines course content and establishes a time schedule

Decides upon appropriate audio-visual equipment for the course and gathers this equipment

Arranges for the required text materials to be available at the bookstore

Develops needed materials--primarily resource materials

Revises materials as appropriate

Prepares lesson plans

Cell 17: (con't.)

Introduces course by discussing its aims and the expectations of students and teachers

Presents lessons using drawing tools, pencils, paper, audio-visual media, texts and other resources

Teaches following a pattern of actual on-the-job performance

Lectures and discusses to meet objectives

Explains the use of and works with students on operating the equipment

Observes students demonstrate their proficiency with the equipment and critiques their performance

Requires individual or group projects and reports

Describes the processes of required work in an attempt to give students a depth of understanding

Demonstrates processes with detailed explanations

Assists, guides, explains, and answers students' questions

Pays close attention to details

Judges effectiveness of presentations by noting class reaction

Scores, grades and reports examination results

Evaluates lessons assigned to teacher aides by individual critique of the aides' performance

Evaluates course through discussions with students and staff

Determines the nature of the problem, defines the required time, and discusses transportation, housing and honorarium prior to accepting a consultant's role

Consults with requester at scheduled time

Applies background of knowledge to the requester's problem

Formulates possible solutions

Selects the most appropriate solution

Recommends preferred solution to requester

Cell 18: Professional -- Personnel Management

In the Professional grouping of tasks, no activities were found to be performed for the purpose of Personnel Management.

Cell 19: Artistic Production -- Research

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Research.

Cell 20: Artistic Production -- Evaluation

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Evaluation.

Cell 21: Artistic Production -- Design

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Design.

CELL 22: ARTISTIC PRODUCTION -- PRODUCTION

In the Artistic Production grouping of tasks, the following activities were found to be performed for the purpose of Production.

Studies work order to understand the nature of the job

Receives work order and schedule of appointment with teacher (or requester) desiring work from the production supervisor

Fills out work order

Confers with requester to determine need, objectives and media to use, subject matter to be photographed, grade level and setting involved

Decides best way to illustrate idea

Makes tentative rough layout during the meeting to be used as a preliminary visual

Roughs entire sequence to insure continuity when sequences are required

Develops a comprehensive "rough" including cover, visuals, photographs, etc.

Refines rough sketches from interview into working drawings

Checks scrap-file for examples of pictures where decisions have been made which may apply to the problem whenever specific problems are encountered in making working drawings

Researches subject matter if necessary

Determines time schedule for production

Attends planning conference with director and requester

Meets with requester to get approval of roughs

Modifies roughs where called for

Confers with director to obtain approval to proceed

Selects film, camera, lights, tripod and reflectors

Transports equipment to location if required

Checks power sources and background

Considers type of film and whether or not to use color or black and white

Sets up equipment in studio

Makes exposure with light meters

Cell 22: (con't.)

Determines background, specific size, type of film and lighting for the production of portraits

Places subject of portraiture in proper position

Adjusts lights to flatter subject

Inserts film in camera

Makes exposure

Selects best negatives

Makes proof sheets for the subject to look at

Decides on best visual composition in terms of need and aesthetics

Synthesizes all visuals and puts them into categories to fit story board

Organizes each picture within the categories of the story board

Considers transitions between visual scenes in terms of aesthetics

Plans for production needs considering photography, lead time needed, art supplies needed, availability of student help, and production sources

Confers with commercial processors

Confers with production and program managers to identify objectives and consider different approaches

Confers with talent concerning script

Instructs cinematographer to photograph necessary footage or stills

Directs studio and technical crew

Writes, revises, and rewrites script in terms agreed upon

Selects music and sound effects

Shoots motion picture film in sequence for t.v. production

Makes decision as to camera angle: close-up, medium shot or long shot

Adjusts light for transition or slow and fast motion

Sound-sinks tape to match visual sequences

Develops code for control tape

Cell 22: (con't.)

Uses teletype machine to punch code onto paper tape allowing presentation to run as planned

Records background or lead-in music on magnetic striped film

Dubs in music with narration

Dubs in credit lines

Duplicates colored slides using Repronar machine

Directs dress rehearsal

Runs through trial to see if changes are needed in terms of meeting the objectives or if the work is aesthetically pleasing

Reruns presentation to verify efficiency of control tape

Briefs all involved personnel before the final run through

Directs program timing to insure various portions run the full length

Accomplishes switching and dissolves

Edits returned film and eliminates retakes

Labels and stores multiple copies of motion pictures

Selects style of type for publication's headlines

Sketches headline in the rough to ascertain the needed space

Makes dummy page

Cuts up roughly typed copy to fit dummy page

Selects photos to accompany article

Marks selected photos and indicates reduction or enlargement to more properly fit dummy

Selects place in article for photos and marks dummy numbering photos to match

Makes opaque mask for each photo and identifies mask with photo

Inserts photo mask

Prints single copy of headline

Inserts final copy into the typed page

Cell 22: (con't.)

Places negatives in slide printer and adjusts for size and focus

Places print film in printer

Processes print film and trims

Mounts print film in metal or plastic holders

Marks work order with appropriate charges

Places master, film and reflector in sequence

Exposes master to ultra-violet

Develops master in ammonia film

Produces rough lettering

Prints foils in appropriate machine

Judges quality of color and register and general appearance of print foils

Obtains suggestions and directions for animation from the artist

Requests and advises on required photos

Guides photographer's work if the production of the final product involves photography

Modifies script with photographer so that it is possible, pleasing and realistic

Inspects all phases of photography, plate making and printing

Reads proofs for errors

Purchases prints for use of circulation department

Tests and approves final product

Attends final approval conference

Selects proper materials for final art work

Performs final art work

Mounts overlays

Returns proofs to photographer for production in required size

Delivers product to client

Cell 22: (con't.)

Files job sheets for use in cost accounting

Files work order

Crops prints

Enlarges or reduces prints to desired size

Copies pictures from books or documents

Provides negatives of copied pictures for the file

Studies color balance when extracting colored prints from books or documents

Uses direct positive, i.e., shoots negatives then prints on film for black and white slides

Cell 23: Artistic Production -- Logistics

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Logistics.

Cell 24: Artistic Production -- Utilization

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Utilization.

Cell 25: Artistic Production -- Organizational Management

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Organizational Management.

Cell 26: Artistic Production -- Information Management

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Information Management.

Cell 27: Artistic Production -- Personnel Management

In the Artistic Production grouping of tasks, no activities were found to be performed for the purpose of Personnel Management.

Cell 28: Technical -- Research

In the Technical grouping of tasks, no activities were found to be performed for the purpose of Research.

CELL 29: TECHNICAL -- EVALUATION

In the Technical grouping of tasks, the following activities were found to be performed for the purpose of Evaluation.

Obtains necessary test equipment to perform proof

Measures power output, degree of frequency, percentage of modulation, audio and video frequency response, distortion and noise

Makes adjustments so that system can perform within specified tolerances

Records all final readings

Signs report and makes available to FCC inspectors and public

Cell 30: Technical -- Design

In the Technical grouping of tasks, no activities were found to be performed for the purpose of Design.

CELL 31: TECHNICAL -- PRODUCTION

In the Technical grouping of tasks, the following activities were found to be performed for the purpose of Production.

Photographs negative to size most practical for job

Judges copy and decides whether or not to use small negative or to print it to a larger size

Prints on metal offset plate

Shoots horizontal pictures for film strip

Sets up machinery

Adjusts gelatin filters for color correction

Shoots film

Processes black and white film

Judges from work description the type of tape to use, i.e., Scotch 131, Ampex 434

Places disc on turntable

Adjusts record level by spot check to determine that sound does not distort in places

Judges by level meter and listening whether or not the sound is distorted

Uses patch panel to connect turntable with tape recorder

Places tape on tape recorder

Synchronizes the start of the tape recording with the beginning of the sound on the disc

Monitors sound during recording

Observes recording operation

Turns off tape recorder immediately after the final recorded sound on disc

Rewinds tape to beginning

Selects a blank circulating tape

Cell 31: (con't.)

Places master on high-speed duplicating machine

Places blank tape in slave unit of duplicating machine

Adjusts recording level

Adjusts bias oscillator by meter on machine

Selects proper master track to be recorded

Adjusts both units of duplicating machine to record selected track

Adjusts recorded speed of slave unit according to specifications of work order

Pushes record button which starts both units

Monitors visually when the recording meter indicates that the recording is complete

Rewinds tape

Makes occasional spot-checks to insure that equipment is working properly

Places tape on bulk eraser and erases recording

Replaces blank tape in storage for future use

Places original material on copy board of camera

Adjusts lights

Sets diaphrams on camera

Makes exposure by turning on lights for proper time

Develops, fixes, washes and drys negatives

Retouches negatives

Places negatives on sensitized plate

Exposes negatives

Wipes developer over plate-drys

Places plate in press

Mixes chemicals

Cell 31: (con't.)

Threads film in developing tank reel

Places film in tank

Fills tank with developer

Times development

Moves reel to short-stop tank

Moves reel to fixing tank

Times fixing

Moves reel to washing tank

Times washing

Removes film from reel and places in drying cabinet

Marks negative with identification number

Mixes chemicals

Places or pours proper chemicals in tray

Places negatives in permanent proofing paper

Selects contrast of paper

Uses contact printer to make contact prints

Exposes printing paper

Places paper in developer

Judges density and contrast

Places developed paper in short-stop

Places developed paper in fixer

Places print in washing tank

Times in washer

Places print in drum-type dryer

Trims print

Marks charges for service on work order

Gives one copy of print, negative and work order to secretary

Cell 31: (con't.)

Places negative in an enlarger and adjusts for size

Exposes paper

Manipulates printing by dodging, burning in, etc., to achieve adequate print quality

Places material to be photographed on copy board

Selects back-lense type film and refers to the technical manual

Focuses lense

Uses light meter to select exposure

Adjusts shutter and diaphram

Makes exposure

Processes film as required

Sets up duplicating machine

Selects track to be duplicated

Places duplication tape on slave unit and adjusts speed

Listens to master to determine sound level and quality

Runs machine to record on duplicate tape

Identifies tape with slide, title, speed, other data

Focuses camera

Shoots picture

Processes film

Prints pictures

Loads film in developing tank

Times development

Transfers to plain water rinse

Transfers to fixer

Times the fixer

Cell 31: (con't.)

Rinses in water

Transfers to hypo eliminator

Washes for five minutes

Drys, places negative in an enlarger

Adjusts the negative for size, croping and focusing

Exposes paper

Develops in open trays

Fixes, washes, drys

Mounts copy on copy board

Sets camera for degree of enlargement or reduction

Exposes for pre-determined time

Processes film under safety light

Refers to grey scale to obtain proper density

Rinses plate, protects with gum solution

Sets up machine

Places ink, etch, and fountain solution in proper places

Mixes solutions according to instructions or experience

Loads machine with paper or art stock

Places master on machine

Etches the master, erases if necessary

Coats master with ink

Runs test copy

Judges quality, positioning, etc.

Runs required number of copies

Packages product

Cell 31: (con't.)

Places in designated location for pick up

Strikes set after production and prepares next set

Sets up and locates all microphones

Checks microphones for proper operation

Sets up other audio sources if required--tape and turntable

Strikes all audio equipment and resets for next production

Switches cameras to monitor at the request of engineer for shading

Dissolves, fades and accomplishes special effects

Sets up lights, matches lighting to the requirements of production and cast

Returns equipment to instructional materials center

Sends film to commercial laboratory for processing

Delivers tapes to assistant director

Delivers a copy of duplicate tape to shipping department

Delivers tape to production technician for erasure

Marks negatives with identification numbers

Records identification numbers of tapes in log book

Marks charges for services on work order

Gives one copy of negative, print and work order to secretary for filing

Gives one copy of negative or print to secretary for delivery to customer

Views tape for critiquing

Records work order with running speed, reel size, number of copies, etc.

Places copies in designated location for pick up

Places file order with copy

Totals production on the off-set press every six months

Orders materials for the next six months period

Cell 31: (con't.)

Cleans machine according to operator's manual and past experience

Discusses features of needed equipment with chief engineer

Installs new equipment and becomes thoroughly familiar with its operation and capabilities

Teaches operation of new equipment to operator

Confers with chief engineer and others of overall plans for expansion of facilities, integration of new equipment or improvement procedures and capability

Studies brochures, trade magazines, etc., to become familiar with new equipment capabilities and operation

Directs floor crew in arranging set according to the director's sketch

Relays director's instructions to the talent

Develops communication code for non-verbal communications

Serves as inter-personal relations coordinator by putting guest talent at ease, assuring cooperation among crew members, and acts as liaison between director and floor personnel

Cuts from camera to camera in response to the director's commands

Works in close teamwork with director

CELL 32: TECHNICAL -- LOGISTICS

In the Technical grouping of tasks, the following activities were found to be performed for the purpose of Logistics.

Inventories equipment per list supplied and updates list by school

Gathers all equipment in one location in that school

Systematically inspects and services each piece of equipment as required

Inspects and cleans film paths and lenses of 16mm projectors

Runs test film and determines quality of picture, sound and cooling system of 16mm projector

Removes the case, inspects, cleans and lubricates mechanical parts of the 16mm projector

Takes equipment back to shop for repair or adjustment

Makes a gross inspection of equipment to locate the problem--if the problem is not readily apparent, runs test material

Refers to schematics when the trouble with equipment is electronic

Refers to operator and technical manuals if the nature of the trouble is mechanical

Dis-assembles, cleans and replaces parts of AV equipment

Re-assembles and rechecks parts of AV equipment

Refers to Library of Congress catalog to adapt the cataloging information to the particular system which applies in the center

Puts description and cataloging information on work sheet

Determines grade level of work sheet

Checks to be sure if order was filled properly--number, price, title, etc.

Proofreads printout and makes correction on the work order

Orders replacement footage by phone or by letter

Splices replacement footage to repair film

Threads film through inspection machine

Cell 32: (con't.)

Starts machine

Removes film from inspection head and replaces damaged portion in manual splicing machine

Cuts out damaged place and judges amount to remove

Scrapes emulsion from overlap and cements to splice

Replaces film in inspection head--restarts the machine

Runs tests materials

Considers possible malfunction as either electronic or mechanical

Refers to mental checklist to locate trouble

Uses tube tester and voltimeter to test component

Refers to schematic diagrams

Uses hand tools to replace parts

Tests speed of operation by timing running of test material

Uses mark on end of shaft for strobe effect

Unpacks equipment--reads manufacturers specifications

Obtains required equipment

Arrives at a point of location a few minutes prior to showing time

Sets up projector and screen

Positions speaker--relys on experience for best location possible

Tests image size, projector location and operation of projector before threading

Threads projector

Test runs, focuses, adjusts sound level to that appropriate for room size and audience

Shows film--repacks equipment

Opens and inspects materials

Replaces missing items and returns for storage

Cell 32: (con't.)

Judges extent of damage on damaged materials and if repair is possible

Places film strip on splicing machine

Replaces film in proper sequence and stores

Checks material against order slip for accuracy of information

Records the title, producer, production date, running time, black and white or color, part of series, et. al., when cataloging materials for the library

Notes date of acquisition and cost

Turns on all equipment in order to warm it

Sends testing note to transmitting operator

Adjusts equipment and checks with transmitter operator to insure proper operation and judges video and audio quality

Organizes slides and fits into the day's schedule according to the announcement book

Places program on video tape recorder

Turns off test signal 5 minutes prior to broadcast time

Turns on video, checks monitor for proper level and quality

Turns off all equipment

Operates equipment to insure adequate functioning

Checks and replaces weak tubes

Realigns equipment

Cleans and replaces air filters

Uses meters and oscilloscope to insure proper operation

Catalogs video tapes

Erases tapes with magnetic tape eraser

Places new blank program information tag on reel and boxes

Sees that the checkout of AV equipment meets factory standards as per reference manuals or personal judgment

Cell 32: (con't.)

Examines all older equipment

Decides on basis of age, relevancy and condition as to whether to discard, replace or repair old equipment

Speaks with representatives of companies

Determines conditions of machines for insurance claims

Reviews new additions and perhaps replaces older additions of instructional materials

Orders replacement parts on a yearly basis

Tests installations against factory specifications

Visually inspects films strip

Scans title page, table of contents, jacket description and the production of books when no commercial cataloging can be found

Uses judgment and Dewey Abridged Decimal classification to assign call numbers

Delivers books and work slips to processor

Checks processor master card

Puts notice slip in material and delivers to typist

Judges grade level of catalog material

Writes annotations using background knowledge and reference information

Gives data to booking clerk for typing

Approves invoices for payment

Confers with traffic manager and studies schedules for putting program sequences on air

Returns all program materials to traffic managers

Completes entries in log

Continuously monitors broadcasts and makes small adjustments as necessary to main transmission of acceptable quality

Records exact transmission time in log and any variations which may occur

Cell 32: (con't.)

Makes gross inspection and operates equipment to confirm whether or not equipment is malfunctioning

Realigns equipment

Cell 33: Technical -- Utilization

In the Technical grouping of tasks, no activities were found to be performed for the purpose of Utilization.

Cell 34: Technical -- Organizational Management

In the Technical grouping of tasks, no activities were found to be performed for the purpose of Organizational Management.

Cell 35: Technical -- Information Management

In the Technical grouping of tasks, no activities were found to be performed for the purpose of Information Management.

Cell 36: Technical — Personnel Management

In the Technical grouping of tasks, no activities were found to be performed for the purpose of Personnel Management.

Cell 37: Clerical — Research

In the Clerical grouping of tasks, no activities were found to be performed for the purpose of Research.

Cell 38: Clerical -- Evaluation

In the Clerical grouping of tasks, no activities were found to be performed for the purpose of Evaluation.

Cell 39: Clerical — Design

In the Clerical grouping of tasks, no activities were found to be performed for the purpose of Design.

CELL 40: CLERICAL -- PRODUCTION

In the Clerical grouping of tasks, the following activities were found to be performed for the purpose of Production.

Deals with clients to determine nature of problem or request

Answers questions on price, time involved and production techniques

Studies production shop capabilities in terms of the work request

Estimates completion time

Writes up work orders with explicit instructions and information on the nature of the request

Assists in collating and binding as required

Proofreads stencils against card catalogue

Proofreads stencils against alphabetized index

Types cards and stencils

Notes possible changes in card catalogue to increase efficiency

CELL 41: CLERICAL -- LOGISTICS

In the Clerical grouping of tasks, the following activities were found to be performed for the purpose of Logistics.

Receives telephone requests and searches subject card file to provide the caller with alternative films with a subject description

Receives and processes requisitions by courier

Categorizes request forms into outlying schools and in town

Refers to booking cards to determine availability of material on the dates requested

Writes scheduled sending date and return date on requisition form

Reschedules distribution of materials if necessary

Assigns accession number to book and records number in three places

Types title, author, accession number and classification number on card and pocket and glues loan card and pocket in place

Types title card, publisher's card, author's card, subject card, accession card and sometimes an editor's card

Places book on shelf or sends to office of person ordering book

Receives periodicals which are delivered by mail

Records in desk file the issue of the periodical that has been received

Types desk file cards for new magazines

Property-stamps magazines

Collects and selects magazines every two months that will be filed for future binding

Binds old issues

Records subscription costs and subscription expiration dates on desk file

Orders and receives thermofax masters

Files thermofax masters by subject

Receives telephone or written request for masters

Files cards in special "In-Use" card file

Cell 41: (con't.)

Places thermofax masters in envelope, addresses envelope and delivers to shipping clerk

Receives work sheet with required data from director

Records computer address number and title of material on computer print out and work sheet

Records the next successive accession or call number on work sheet

Types and affixes labels to the material

Treats film with vita-film

Places material in proper storage place and labels place with accession number

Types information from work sheet on computer in-put sheet using special typewriter

Types title, call number, computer address number, number of copies, cost source, etc., on shelf list card

Types temporary title and subject cards

Files work sheets

Receives confirmation of preview bookings from source and files confirmation with requesting letter

Types identification data for new materials on evaluation report form

Confirms that identification data on evaluation report form matches the material received

Assists director in sorting materials to three locations in the building--one for elementary, one for junior high, and one for senior high

Insures that evaluation forms and tags are available

Sorts materials according to "buy", "no buy" and "urgent"

Matches evaluation forms with materials

Transfers codings from evaluation sheets for computer input

Records appropriate film catalog data under subject listing, title listing and numerical listings

Types new catalog annually

Cell 41: (con't.)

Types subject list on ditto masters, duplicates and distributes to faculty

Collates, staples and addresses subject list

Proofreads cards and listings

Checks catalog to determine if material is in library

Conducts search of other catalogs to locate source of other materials not currently in library

Types order forms

Returns films by mail to source after each use and notes return date on copy of order form

Enters use-data on statistical report

Identifies material package with copy of order form

Types film identification tags for all films to be used the following day

Obtains film from storage and tapes film tag to film

Stacks film in two labeled locations; one for studio showing and one for campus showing

Sorts film for return to film library or return to outside source

Delivers library films to film inspection and repair department

Files photographic negative of identification card under departments and special subject heading

Compiles monthly tabulation of volumes added to library

Send memo of new acquisitions to faculty through campus mail

Selects subject heading under which to file pamphlets and newspaper clippings

Files materials in subject folders

Clips newspaper articles

Laminates flimsy material

Checks out material to users

Cell 41: (con't.)

Refers to National Union Catalog under copyright year and author for cataloging information

Types and mails order forms

Notifies requester of confirmed dates for booking of materials

Checks inventory cards to insure that equipment or material is available

Annotates inventory cards with date "out", scheduled-return date, and name of requester

Inspects returned equipment

Locates and obtains requested material from storage

Delivers material to requester

Records on booking card the dates material will be away from the library

Files request form alphabetically by school

Delivers request forms to shipping department

Confirms booking by sending request form to school

Checks out books to customer by pulling card from pocket of book, stamping book and card and filing card by date

Assists customer in locating desired microfiche

Assists customer in using microfiche reader

Cleans up and returns microfiche to appropriate file

Inventories books on shelves

Inspects condition of books

Inventories periodicals

Sends duplicate copies of periodicals to schools

Searches for missing or overdue books

Distributes alphabetized catalog cards to schools

Adheres labels to book spines and jackets

Cell 41: (con't.)

Laminates book jacket

Files returned packing slips alphabetically by school

Assembles approved buying list for periodicals desired by schools

Delivers approved buying list to IBM so that IBM cards can be made for each periodical

Determines cost for approved buying list and delivers cost to IBM for adding to IBM cards

Receives and compiles purchase requests from schools

Prepares bibliography of periodicals purchased

Requisitions materials

Receives requisitions for material either by courier from the schools, by mail, by telephone or in person

Identifies materials as belonging to the media center

Sprays book bindings with clear plastic spray

Delivers input sheets to computer service

Replaces temporary file cards with computer-printed cards

Types form letters requesting materials for preview on selected dates

Files carbon copies of form letters

Places photographic negatives in protective envelopes and labels the envelopes

Files photographic negatives numerically

Identifies photographic negative file drawer with embossed plastic tape

Places photographic negative file cases on shelf in numerical sequence

Writes description of total photographic job on back of file copy of proof prints

Staples photographic proofs to notebook paper, labels sheet of paper with job number and date

Files photographic proofs in looseleaf notebook under departments or special subject headings

Cell 41: (con't.)

Types photographic job file cards

Receives and files brochures and publisher's lists

Labels file drawers and folders with subject headings

Types additional information on all cards other than main entry cards

Types book pocket check-out card and book identification tab

Double checks the accuracy of all cards

Refers to material's catalog, commercial brochures, and past-usage records to insure that requester receives material pertinent to his needs

Types return-address card and puts postage for return mailing on card

Records in daily film record book the date the film was received, the date it is to be returned, the cost of postage, the name of requester, the title, rental costs, and source

Solicits film use information from film users

Upon return of equipment, enters return date in daily equipment book and erases notation on inventory card

Prepares inventory card to include serial number, make, model, date, supplier and recipient

Stencils identification information on equipment

Delivers equipment to recipient via courier service

Files inventory cards for future inventory purposes

Prepares duplicate check-out cards for customer's own check-out system

Packs books in boxes for delivery to schools and afixes address label

Checks book against master file to obtain a file set of cards

Prepares file set of cards if none is found in master file

Duplicates file sets of cards

Confers with supervisor over bids to select suppliers

Charges purchases to departments requesting materials

Cell 41: (con't.)

Annually re-computes budget

Approves invoices for payment

Closes out all accounting in ledgers and file

Contacts user if material is overdue

Types accession information from work sheets on multilith masters for inclusion in bi-monthly newsletter

Types and distributes memorandums to requester

Evaluates brochure content and distributes to interested faculty or staff member

Writes to various sources for materials and information

Reminds customer of due-date and explains the process of returning materials

Assists the customer in clarifying his problem or objective

Demonstrates microfiche reader operation

Sends overdue notices and missing items notices to school

Directs activities of assistants

Checks assistants' work

Checks conditions of materials upon arrival and advises supervisor of to what purchases should be made

Evaluates extent of use of school equipment by telephone calls for replacement or by recurring loans

Inspects all data for accuracy and completion

Cell 42: Clerical — Utilization

In the Clerical grouping of tasks, no activities were found to be performed for the purpose of Utilization.

CELL 43: CLERICAL -- ORGANIZATIONAL MANAGEMENT

In the Clerical grouping of tasks, the following activities were found to be performed for the purpose of Organizational Management.

Types scheduling information on payroll cards

Places payroll cards on assignment board

Sorts payroll cards according to department to be billed

Types bills with information including date, time, place, address and charges

Files billing copies for accounting purposes

Sends bills to business office for distribution to appropriate departments

Marks payroll cards and schedule book to indicate that billing has been accomplished

CELL 44: CLERICAL -- INFORMATION MANAGEMENT

In the Clerical grouping of tasks, the following activities were performed for the purpose of Information Management.

Greets visitors of the media center

Guides visitors through major sections of media center

Presents overview of center's operation adjusting commentary as appropriate to audience

Explains work performed in each section and how center can be used by visitors

Assists in the preparation and distribution of brochures concerning the media center

Provides assistance to students in locating materials, in the general use of the facilities, and in the use of the materials once located

Instructs students in the use of AV equipment

Cell 45: Clerical -- Personnel Management

In the Clerical grouping of tasks, no activities were found to be performed for the purpose of Personnel Management.

Cell 46: Manual -- Research

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Research.

Cell 47: Manual -- Evaluation

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Evaluation.

Cell 48: Manual -- Design

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Design.

CELL 49: MANUAL -- PRODUCTION

In the Manual grouping of tasks, the following activities were found to be performed for the purpose of Production.

Reads work order and receives instructions from requestor

Selects either glossy or matte surface plastic film as specified by work order

Cuts plastic film to size required and places material on the plastic

Tacks plastic to material with tacking iron

Places material and single plastic sheet in hot press

Heats press according to material and clocks operation

Trims off excess plastic

Selects mounting board according to work order specifications

Tacks dry mounting tissue to back of material with tacking iron

Trims mounting tissue to exact size of material

Places material in proper position on mounting board

Tacks in position with tacking iron

Pre-heats mounting press

Places material in hot press and selects time and heat

Trims mounting tissue to exact size of material

Makes out charge slip for time and materials

Delivers completed lamination to shipping room or delivers to requester

Calls requester to inspect product

Files completed work order

CELL 50: MANUAL -- LOGISTICS

In the Academic grouping of tasks, the following activities were found to be performed for the purpose of Logistics.

Checks in supplies

Pulls copies of order slips from files in order to ascertain if delivery was correct

Files copy of order slips

Logs in preview film and holds for evaluation sessions

Handles telephone requests for AV equipment

Files request forms by date and route

Sequences requisition forms by type of educational material listed, on the day prior to shipping

Records name of requestor, make and type of material, inventory number, date out and date to be returned

Selects material from storage as specified on request form

Selects film from storage rack, places with requisition form and labels can with packing slip

Sorts film cans and requisition forms by school

Places films in couriers' sacks to be delivered to individual schools

Places material in boxes

Places boxes in cart

Picks up delivery truck from garage

Drives to instructional media center to load materials identified for particular route

Delivers materials in accordance with specified schedule

Unloads truck

Stacks boxes

Opens all boxes and loads materials on book trucks or dollys

Checks material being returned against copy of request form

Cell 50: (con't.)

Inspects and test runs all returned items for damage

Asks customer, if returned personally, if any malfunctions in equipment

Returns items to storage racks

Checks rental film in by removing tags and recording the company, title and date

Sorts films into the following categories: 1) rental films, 2) supplies, 3) first class and 4) preview film

Weighs, posts, sorts and bands all outgoing mail

Picks up inter-school mail sacks and sorts mail as to recipient

Places mail sack in film box for next days delivery

Delivers mail to mail room

Delivers AV equipment to AV department for repair

Shelves reserve books

Replaces cards in books

Stamps book with appropriate school's name

Locates materials and obtains from shelves for storage

Checks for presence of attendance reports

Makes out work orders for xerox machine listing the department billing number, number of copies and types of material to be copied

Turns on xerox machine

Places material to be copied in copying area

Depresses print button on xerox machine

Removes copy

Marks the work order with the charges for xerox service

Sends copies and original with one copy of work order to customer

Reads xerox meter at the end of the month to compile use reports

Sends cards to xerox company in order to compile rental charges

Cell 51: Manaul — Utilization

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Utilization.

Cell 52: Manual — Organization Management

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Organization Management.

Cell 53: Manual — Information Management

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Information Management.

Cell 54: Manual — Personnel Management

In the Manual grouping of tasks, no activities were found to be performed for the purpose of Personnel Management.

DATA LISTING BY FUNCTION

The Media Researcher
(Research and Development Function)

Goal:

To generate and test theory, develop products, and the methodology of instructional media.

Products:

New knowledge, prototype systems and procedures.

Major Tasks:

Defining research needs.

Reviewing literature.

Developing hypotheses.

Formulating research objectives.

Developing experimental designs.

Collecting data.

Analyzing data.

Interpreting data.

Evaluating results.

Applying results.

Developing prototype systems.

Manages research operations.

Activities:

Reviews professional literature, learning theory, technical publications, etc. to keep abreast of developments in the field.

Conceptualizes a gap in knowledge related to media.

Defines research ideas.

Reviews requests for proposals.

Expands and delimits ideas into possible projects.

Writes proposals.

Activities: (con't.)

Acts as project trouble shooter.

Authorizes expenditure of funds.

Carries out public relations.

Reports progress to funding agency.

Writes and edits final report.

Plans and initiates dissemination activities.

Writes professional journal articles.

Insures that there is no copyright infringement.

Analyzes other organizations and attends conferences to keep abreast of the state of the art.

Analyzes and evaluates completeness of current materials collection.

Analyzes operations to determine areas of need.

Carries out cost effectiveness estimates.

Constructs system analysis charts.

Establishes criteria and procedures for self analysis.

Translates what people want into product specifications.

Develops a general strategy or plan to produce a desired product, either alone or with others.

Formulates hypotheses about the market for a product, the number to be produced and the materials that will be required for the production.

Initiates and supervises the development of experimental material.

Analyzes project costs.

The Media Evaluator
(Evaluation Function)

Goal:

To provide information to those individuals responsible for instructional programs to allow them to make appropriate adaptive decisions regarding the management, development, and utilization of media in instruction.

Products:

Appropriate information displays of the effects of specific products and procedures.

Major Tasks:

Identifying what decisions need to be made.

Determining data needed to satisfy decisions.

Developing evaluation models.

Gathering data.

Interpreting data.

Developing data displays.

Managing evaluation operations.

Activities:

Determines parameters, priorities and indicators, mathematically, physically and graphically.

Describes target audience.

Identifies kinds of decisions that target audience will need.

Analyzes evaluation models and theories that are already being used and judges their appropriateness to the present situation.

Sets priorities among values.

Selects appropriate indicators.

Defines appropriate evaluation procedures.

Formulates evaluation models.

Tests model's usability for each particular project and considers its usability for other projects.

Activities: (con't.)

Writes recommended evaluation procedures.

Develops evaluation instruments by writing and otherwise creating items that measure project objectives.

Confers with colleagues as to appropriateness of items.

Determines data processing and translation procedures.

Designs and arranges for administration of evaluation instruments and/or field tests.

Supervises distribution of evaluation instruments, return of instruments and compilation of results.

Administers evaluation instruments to selected population.

Tabulates and consolidates evaluation responses.

Summarizes results.

Interprets data in view of objectives.

Modifies evaluation instruments on the basis of the interpretation of the data.

Analyzes results to determine a new course of action.

Determines that design values are correct.

Makes recommendations to client based on evaluation results.

Follows up recommendations to determine if performance has been modified.

Field tests instructional programs with a small sample target audience.

Tests effectiveness of program through extended evaluation.

Determines subject matter for evaluation institutes, in-service courses and/or workshops in conference with other staff members.

Confers with funding agencies, administrators, staff members and potential students to determine their evaluation goals.

Plans evaluation procedures for courses of instruction.

Judges staff presentations through informal observations and participant comments.

Utilizes attendance reports, written critiques and instructor judgments in determining course effectiveness.

The Media Designer
(Design Function)

Goal:

To translate theory and empirical evidence about learners, media, subject matter content, settings and techniques into instructional systems specifications.

Products:

Design specifications appropriate to guide production.

Major Tasks:

Clarifying and analyzing specific behavioral objectives.

Defining and describing learners' characteristics.

Determining and describing properties of content.

Identifying sequences of learning tasks.

Selecting appropriate media forms.

Determining setting specifications.

Planning instructional strategies.

Revising specifications.

Manages design operations.

Activities:

Identifies and delimits problem area and target audience with client or sponsor.

Analyzes professional journals, research findings, etc. to form a background of knowledge in general subject area.

Applies background of knowledge to the problem.

Visits and corresponds with others working on similar problems.

Analyzes procedures, methodology and findings of related projects.

Reconcils conflicting views of subject matter experts.

Defines the political implications of the project.

Incorporates personal design goals in generally formulating what will be included in the instructional program.

Activities: (con't.)

Establishes a general plan of operation in approaching the design problem.

Brainstorms the subject matter area with client and/or colleagues to identify and outline key concepts.

Conceptualizes the final product to determine its feasibility for production and likelihood of use.

Cost-estimates the development of the product.

Obtains necessary design materials.

Formulates general objectives, evaluation procedures and operational budget.

Translates general objectives into specific behavioral objectives.

Specifies both intermediate and terminal objectives observing constraints of: realistic possibilities of achievement, copyright limitations, production capability, and fiscal considerations.

Develops a sequence of sub-goals.

Brainstorms with staff to develop tentative step-by-step design procedures.

Develops a format as suggested by the subject area and the intended impact.

Generates instructional strategies based on research findings.

Develops instructional strategies to show sequence through outlines and flow charts.

Describes techniques of instruction to be used.

Identifies media to be employed and the sequence for development.

Selects key ideas to be mediated.

Translates ideas into tentative visuals.

Decides upon treatment based on grade level, setting, and specific sub-goals.

Develops production story board outlining visuals and accompanying sound or other sensory elements.

Activities: (con't.)

Determines and describes or specifies physical requirements for materials, i.e., length, sound or silent, black and white or color, size of lettering, type of lettering, etc.

Writes specifications for required audio-visual equipment.

Outlines instructional procedures in the classroom.

Specifies post-instructional skills.

Develops evaluation format.

Writes evaluative questions.

Conducts and analyzes field tests of instructional design.

Finalizes instructional design by drawing up complete specifications.

Delivers specifications and explains design to sponsor or client.

The Media Producer
(Production Function)

Goal:

To make specific instructional products by following design specifications and artistic standards.

Products:

Prototypes, final editions, or massed produced versions of instructional materials.

Major Tasks:

Writing papers, scripts, texts, programs, etc.

Drawing visuals.

Photographing visuals.

Recording audio.

Operating production equipment.

Combining components into composite products.

Managing production operations.

Activities:

A. Managing

Confers with experts to plan improvement of production capabilities: facilities, integration of new equipment, improvement of procedures and up dating of services.

Determines priorities for exchange of out-dated equipment.

Analyzes brochures, trade journals and appropriate research reports to differentiate between various equipment capabilities and operations.

Analyzes staff capabilities in constructing "in-house" new equipment.

Analyzes general production needs, considering all production processes available, materials and supplies required, availability of qualified staff and normal bad time required.

Determines materials required to sustain operations for a period of three months or more.

Determines specifications for materials production.

Activities: (con't.)

Determines qualifications required when hiring new production staff.

Supervises production staff by setting deadlines, specifying direction of efforts, delegating work, coordinating operations, and allocating money.

Interrogates clients to determine nature of problem or request.

Discusses request with client to clarify specific objectives and establish a background of specifics such as subject matter details, grade level and desired setting.

Analyzes job request inputs to define work specifications.

Analyzes job to determine price, time involved and production techniques and communicates to client for approval.

Determines work order based on shop capabilities with explicit instructions and detailed information about the job.

Establishes priorities with staff for all production elements.

Defines overall production work schedule.

Delegates authority and responsibility for total production or parts thereof to appropriate staff members.

Brainstorms with artist, photographers and other staff experts to determine best ways of communicating ideas.

Visits and corresponds with others working on similar problems, where job is other than routine and complex.

Estimates completion time.

Determines if special materials are required and orders them.

Supervises staff activities during all phases of production.

Monitors approaching deadlines and modifies work schedules as required.

Initiates requisitions for expenditures of budgeted funds.

Interacts with client to inform him of production progress.

Computes cost of prototype and cost of duplicates.

Demonstrates prototype to client for approval or determines additional modifications.

Makes out charge slip for time and materials and submits bill to client.

Activities: (con't.)

Coordinates distribution of the product.

Follows up with client to determine satisfaction.

Files work orders, job records, and charge slips for use in cost accounting.

Plans strategy to disseminate new and unusual production results to the profession.

Advises on scenes to be photographed and guides photographer's work.

Secures radio and/or television broadcast time.

Determines need for and seeks permission from producers and publishers to use their materials.

Coordinates complex production such as motion pictures or television programs.

Totals production outputs periodically.

B. Writing

Writes professional articles.

Writes proposals, progress reports and final reports.

Prepares technical reports.

Writes in-service production course syllabi.

Determines and writes introduction to instructional packages with directions on how to use.

Outlines and writes scripts for motion pictures, television and radio.

Prepares newsletter, bulletins and memorandums.

Writes brief annotations or descriptions summarizing the content and nature of media materials.

Identifies content and writes promotional publications.

Supervises manuscript preparation and printing.

C. Evaluating

Analyzes objectives of each production job to determine criteria for judging quality.

Activities: (con't.)

Appraises production operations to determine extent of adherance to specifications.

Monitors progress of production in terms of time, costs, and quality.

Judges film "rushes" to determine requirements for retakes.

Judges quality of color, register and general quality of visuals.

Determines best negatives.

Judges layout and copy to select appropriate photographs.

Selects appropriate pictures from artist's sketches.

Analyzes video tapes to determine quality of television programs.

Test runs final product to determine if it achieves objectives and is aesthetically pleasing.

D. Producing photographs

Studies work order and/or confers with requester to determine specifications and intended use of photographs.

Photographs assigned subjects including portraits, events, scenes, objects, or other pictures.

Selects film and equipment as appropriate for job.

Manipulates background and lighting to enhance subject or to illustrate desired object or scene in the most effective manner.

Operates all types of still picture cameras.

Operates motion picture cameras.

Uses associated equipment and/or attachments as necessary such as exposure meters, lights, filters, lenses, etc.

Determines amounts and prepares processing solutions of chemicals.

Processes black and white still picture film.

Processes black and white motion picture film.

Processes color still picture film.

Processes color motion picture film.

Retouches negatives.

Activities: (con't.)

Contact prints black and white negatives for proofs or final result.

Enlarges or reduces picture to achieve specified size.

Performs manipulations such as cropping, dodging, burning-in, etc. during printing operation.

Files negative, print and work order.

Packages product for delivery to requester.

Uses direct positive film or prints pictures on film for use as black and white transparencies.

Copies pictures in black and white or color.

Operates process or copy camera for accurate copy work or for preparing plates for printing.

Duplicates color transparencies.

E. Making motion picture and television productions

Confers with clients to identify objectives and consider various approaches.

Prepares storyboards by rough sketching entire sequence.

Synthesizes all visuals and puts them into appropriate places in storyboard.

Obtains suggestions and directions for animation from artist.

Judges and approves final art work and audio and video plan.

Writes shooting script.

Critiques script for content, sequence and clarity.

Modifies script with cameraman to insure that it is possible and realistic.

Secures approval of requester on shooting script.

Supervises and/or photographs necessary fill in footage or stills.

Identifies and selects music and sound effects to fit visuals.

Records background or lead-in music.

Builds set in studio or inspects location to establish backgrounds and power sources.

Activities: (con't.)

Directs floor crew in arranging set according to director's sketch.

Sets up, locates and checks all microphones and matches lights to requirements of production and talent.

Sets up and checks other audio sources, if required.

Matches operation of all cameras (shading).

Serves as interpersonal coordinator by putting guest talent at ease, assuring cooperation among crew members and acting as liaison between director and floor personnel.

Advises actors concerning script and instructs them in the use of non-verbal communication code.

Briefs all involved personnel before final run through.

Directs dress rehearsal.

Directs studio and technical crew.

Directs pace of action to insure that portions run required length.

Shoots television production in sequence.

Relays director's instructions to talent.

Cuts from camera to camera, dissolves, fades and accomplishes special effects in response to directors commands.

"Strikes" set and all equipment after production.

Sound synchronizes audio with video, if required.

Dubs in music with narration, if appropriate.

Dubs in credit lines, if appropriate.

Records identification numbers of video tapes in transmission log.

Labels and stores multiple copies of motion pictures.

F. Producing art work

Clarifies proposed work with requester and/or refers to work order.

Makes tentative rough layout and sketch.

Maintains and refers to resource file of pictures, drawings, sample layouts, size templates, etc.

Activities: (con't.)

Develops a comprehensive rough as a working drawing.

Critiques rough with requester to get approval.

Modifies roughs, if required.

Develops final art work.

Letters final art work if appropriate.

Prints masters and color separation overlays by appropriate method such as "daizo" if art is for overhead visuals.

Mounts picture on appropriate mounting board if it is not for projection.

G. Sound recording

Clarifies job with client and/or reference to work order.

Properly adjusts and operates tape recorder to record "live" sound.

Analyzes placement of one or more microphones to locate strategic positions.

Balances input from several microphones.

Adjusts recording level and monitors meter during recording.

Rewinds tape and plays back to judge quality.

Tape records from discs.

Tape records from radio.

Duplicates tapes on high speed duplicating machine.

Identifies recording with number, title, recording speed, track identifier, etc.

Erases tapes for storage if they are to be reused.

H. Producing publications

Clarifies job with client and/or reference to work order.

Cuts up typed copy to fit dummy page.

Sketches headline to ascertain need space.

Determines appropriate place in article for photographs or illustrations.

Activities: (con't.)

Selects appropriate photographs for desired spaces in copy.

Marks selected photographs indicating cropping and final print size.

Determines required sizes and orders pictures printed.

Crops prints as necessary.

Mounts pictures and copy in final dummy layout for printer.

I. Printing

Clarifies nature of job with client and/or reference to work order.

Places negative on sensitized plate or photographs copy onto sensitized plate with process camera.

Exposes sensitized plate.

Develops and dries plate.

Etches plate.

Places plate in press.

Coats plate with ink.

Runs test copy.

Loads press with paper or art stock.

Runs required number of copies.

Cleans machine according to operator's manual.

The Media Provider
(Logistics Function)

Goal:

To provide acquisition, storage, supply, and maintenance support to the appropriate operations and management of media in instruction.

Products:

Media resources procured, maintained, and transported.

Major Tasks:

Selecting.

Ordering.

Purchasing.

Classifying.

Cataloging.

Storing.

Assembling.

Scheduling.

Distributing.

Operating.

Repairing.

Managing logistics operations.

Activities:

A. Management

Defines logistics standards based upon experience, customer requirements, and state and national standards.

Establishes logistics goals.

Communicates logistics goals to staff.

Develops communications network to provide exchange of staff ideas, plans and details of operation.

Activities: (con't.)

Instructs new logistics employees in their job role.

Delegates logistics responsibility and authority.

Judges efficiency of logistics personnel.

Judges accomplishment of logistics goals by comparing historical with current dta.

Interrogates customers to define and clarify their objectives.

Judges effectiveness of logistics operations.

Makes decisions regarding purchase of materials and supplies.

Determines logistics operation budget.

Develops and monitors logistics record keeping.

Negotiates contracts for services, given or received.

Designs storage area for efficient work flow.

Analyzes logistics work and traffic flow in designing new facilities.

B. Print materials

Compiles and organizes requests for purchase of print materials.

Selects sources and purchases print materials.

Unpacks, inspects and properly stamps newly purchased print materials.

Assigns accession numbers to materials.

Compiles listings and annotations to inform users of acquisitions.

Adapts cataloging systems, utilizing Library of Congress or other commercial indexes, to local system.

Determines data for cataloging by reviewing title page, table of contents and jacket annotation and/or utilizing commercial cataloging resources.

Supervises or carries out print material processing which includes such things as preparing cataloging cards, labeling and shelving aterials, protecting materials by spraying and/or laminating, and packaging for distribution.

Distributes duplicate sets of cards and materials to affiliated agencies.

Activities: (con't.)

Determines upon request by use of card catalog, if material is available in library.

Loans materials to requesters following prescribed procedures.

Places selected materials on reserve.

Microfilms selected periodicals.

Packages and mails references which can be released, or makes photostats of those which cannot.

Maintains file of brochures and publishers lists.

C. Non-print materials

Judges merits of commercially available materials considering grade level and subject matter area and selects items appropriate to meet program needs.

Identifies and orders materials for preview.

Determines whether materials received conforms to order.

Types identification data for new materials on evaluation report form.

Consolidates evaluations of all items ordered for preview.

Collects and returns previewed material and equipment used.

Confers with colleagues to verify evaluation information.

Sorts evaluations according to desirability.

Receives and compiles requests for purchase and/or loan of materials.

Determines booking and cataloging procedures that are workable in local situations.

Determines and marks ownership of new materials by checking against purchase orders.

Records title, subject, identity number, producer, production date, running time, black and white or color, part of series, etc. on catalog cards (may use computer codings).

Prepares and distributes a catalog of available materials.

Determines availability of materials for learning on dates requested.

Activities: (con't.)

Processes requests for loan of materials following prescribed procedure which includes booking confirmation, identity tagging and shipping.

Conducts routine equipment and materials inspection and servicing.

Sorts and properly stores all items received.

Conducts periodic inventories.

Determines condition of equipment for insurance claims.

Determines justification of staff purchase requests in terms of available money, need, acceptability, and quality of item.

D. Film and equipment inspection and repair

Inspects and repairs film.

Determines and orders replacement footage required.

Inspects, maintains and repairs all audio visual equipment.

Determines, on basis of age, relevancy and condition, whether to discard, replace or repair old equipment.

E. Provides and operates equipment

Determines equipment needs, including time and place, as required by work order.

Sets up and operates equipment components as required.

F. Administers cooperative purchasing program

Determines which agencies wish to cooperate in equipment purchasing.

Determines basic equipment specifications.

Puts items out for bids.

Conducts public bid openings at advertised time.

Determines if bids meet specifications.

Identifies low bidders and announces award of contract.

Prepares composit purchase order based on requests from participant organizations.

Accounts for the costs of cooperative purchasing.

Activities: (con't.)

G. General

Maintains files of photographic negatives and proofs.

Obtains, files, and duplicates Thermofax Masters.

Maintains duplication services.

Advises customers in using library facilities.

Advises in the use of media and the planning of new facilities.

Plans, test drives and revises delivery routes.

The Media User
(Utilization Function)

Goal:

To employ media in an instructional setting for the purpose of bringing about specified changes in learners.

Products:

Learning outcomes.

Major Tasks:

Assigning the appropriate media system to the appropriate learner(s) at the appropriate time.

Preparing learners for the media system.

Providing guidance for the use of the media system.

Performing the teaching act with the appropriate media system.

Maintaining an effective communication and feedback network.

Activities:

Preplans lessons to determine which parts are appropriate to mediation.

Determines specific media to be employed in each instance.

Determines strategy for utilizing media in the lesson which includes such areas as timing, affect, information, learner response, etc.

Defines instructional setting related to media employment -- e.g., large or small group, physical arrangements, teacher presence, etc.

Assembles required materials and equipment.

Prepares learners to effectively interact with media.

Employs media in appropriate ways at appropriate times.

The Media Organization Manager
(Organization Management Function)

Goal:

To plan, establish and maintain the organizational structure necessary to support the activities required in the operations and management of media services.

Products:

Relevant organizational operations.

Major Tasks:

Determining need for instructional technology.

Establishing policy to satisfy needs.

Executing the policies into operational realities.

Co-ordinating the various operational elements so they act together.

Maintaining an effective communication and feedback network.

Keeping a cost accounting of the operations.

Modifying existing and/or designing new operations to accommodate present and future needs.

Activities:

Formulates organizational standards, goals and objectives.

Designs and/or revises organizational structure in light of objectives.

Defines organizational policies.

Designs management system.

Communicates with technical experts during organizational planning and operation.

Defines organizational operations to achieve objectives.

Plans with superiors as to future emphasis and need of the organization.

Analyzes work and operational patterns.

Plans new and/or modified facilities based on evaluative data.

Conducts task analyses for each work division.

Activities: (con't.)

Develops organizational budget.

Determines plans for future operations and judges appropriate time for implementation.

Seeks inputs from clients to plan future organizational services.

Specifies criteria and plans procedures for organizational analysis.

Conceptualizes the management of all projects.

Defines strategies to obtain funding.

Analyzes the area serviced by the organization, including demographic data, cultural mixes, key individuals, influential institutions and people, etc.

Plans logistics and implementation activities of organizational operations.

Determines project constraints; time limits, manageability, sources of information, kinds of data to be obtained, compliance with contractual terms, etc.

Prepares cost estimates for projects.

Analyzes organizational tasks involved and determines a sequence for achievement.

Estimates market and number of items to be produced.

Supervises staff performance.

Visits and communicates with others working in similar programs.

Determines schedules and locations for evaluation of organizational operations.

Plans strategy to incorporate new technological developments to meet changing requirements and objectives.

Confers with interested parties to plan in-service classes, short media courses, and/or institutes including course content, emphasis, equipment, costs and location.

The Media Information Manager
(Information Management Function)

Goal:

To plan, establish and maintain the means for supplying essential information, both internal and external, necessary to the operations and management of a media service.

Products:

Operational information networks.

Major Tasks:

Identifying information appropriate to the management, development and utilization of media.

Gathering information from various sources.

Diffusing information.

Promoting the importance of media in instruction to all appropriate audiences.

Activities:

Defines organization information philosophy, goals and policies.

Defines functions, duties and responsibilities of personnel responsible for information processing.

Defines lines of communication.

Plans and conducts staff meetings for exchange of ideas, planning, operational details and priorities.

Distributes media catalogs and descriptions of available services.

Brainstorms with clients and artist to determine strategies for communicating and distributing data.

Writes professional papers.

Prepares progress, technical and final reports.

Makes formal presentations, such as reporting research findings.

Promotes a favorable image of the organization.

Designs and implements promotional activities to disseminate products.

Activities: (con't.)

Represents project interests in organizational planning situations.

Attends conferences with professional meetings to obtain and disseminate information.

Disseminates information as a consultant.

Plans information needs for the conduct of conferences.

Conducts tours showing facilities and describing work.

Writes and circulates bulletins within the organization.

The Media Personnel Manager
(Personnel Management Function)

Goal:

To provide qualified and adequately prepared staff for the operations and management of a media service.

Products:

Qualified staff in sufficient quantities.

Major Tasks:

Determining personnel needs for the management, development, and utilization of media.

Recruiting and screening candidates.

Selecting and employing personnel.

Terminating employment of unqualified and excessive personnel.

Maintaining personnel job satisfaction.

Providing in-service training both technical and interpersonal.

Activities:

Analyzes operations and procedures in light of personnel requirements.

Writes job descriptions that define capabilities of required personnel.

Advertises unfilled positions through appropriate channels.

Maintains personal file on all job applicants.

Interviews job applicants and screens for needed skills and capabilities.

Selects and hires.

Trains newly hired personnel to organizational idiosyncrasies or assigns them to a trainer.

Discusses employees performance and suggests corrective actions, when necessary.

Discusses inpending discharge with employee.

Defines interaction strategies of personnel.

Activities: (con't.)

Assigns actual people to fill positions.

Defines personnel roles in relation to projects.

Identifies personnel to assume supervisory roles and delegates authority and responsibility.

Observes and evaluates employee performance.

Counsels with employees in their personal problems.

Interacts continuously with personnel to determine more effective and efficient operations and improved working conditions.

Part IV

Media Training for the Future

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Media Training for the Future

INTRODUCTION

The dynamics of educational goals, objectives, and learner populations, changes in organizational structures and management, shifts in instructional strategies, curricular patterns and techniques, and developments in instructional media are among the forces which are currently shaping the roles and responsibilities of all educational personnel.

However, these educational forces are both being affected by and are affecting societal influences such as population growth, cultural stresses, urbanization, changing governmental relations, career pursuit and longevity, increased leisure time, and an expanding (in some ways overwhelming) accumulation of scientific and technical knowledge.

Present and prospective media training programs at all levels -- preservice, inservice, graduate, special institute -- must become responsive to these forces and developments in terms of diagnosing and describing the essential experiences needed to prepare competent media personnel now and in the immediate future.

Projecting the nature of and demands for education in the next five to ten years is critically needed for planning. However, it is also imperative that emergent work functions and activities be envisioned to provide information for inferring personnel capabilities and therefore curricula that need to be provided, i.e., designed, developed and implemented.

The intent of Part IV of the Guidelines Manual is to provide educational media planners with as significant, reliable and acceptable information as possible regarding factors which will influence the future media situation. It should be noted, however, that the means for collecting and assessing this projected type data are only now being pioneered and will require considerably more development. Media Guidelines project resource constraints limited the scope of data generated from these techniques, but the project staff is confident that the methods employed will have relevance for subsequent projection efforts.

Details of the procedure employed in obtaining the projections are described in the Media Guidelines final report. Briefly, it consisted of searching the literature to identify significant trends, interviewing educational sociologists, planners, and technologists in the field to obtain their opinions concerning the future of media in education, and synthesizing and validating these data by means of a modified delphi technique.* Results of these efforts produced eight broad projections for education over the next ten years along with statements of contributing forces.

Assuming the validity of the projections and the contributing forces, implications were then derived for the field of instructional media and related activities were hypothesized and categorized under functional headings. The term activities is used here in a very general sense and includes such factors as work to be performed, cautions to be exercised, settings to be dealt with, equipment to be operated, attitudes to be modified, etc.

The information provided in this section of the Guidelines Manual obviously has only scratched the surface in terms of projections, implications and suggested activities in the media field. Furthermore, it is expected that some reviewers may disagree with several of the implications that have been drawn and will prefer to derive different ones.

Irrespective of an individual's agreement or disagreement it is hoped that this material will stimulate the reviewer to expand his thinking for planning future media programs: Expanding on particular projections, deriving different implications, suggesting additional media related activities, anticipating emerging problem areas, etc.

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*The following listing identifies the individuals who were interviewed for the projections and those who participated in the Delphi exercise:
Projection Interviewees - Dean Brown, Robert deKieffer, Theorwald Esbensen, Eli Ginzberg, Mary Alice Hilton, Arthur Lewis, Margaret Mead, Wesley Meierhenry, H. Del Schalock, Westley Sowards, Ralph Tyler
Delphi participants - Donald Ely, Robert Gerletti, John Haney, Herbert Hite, Grace Lacy, Phil Lange, L.C. Larson

Projection #1: Change and Challenge will be the Dominant Characteristics of a Society in the 1970's.

Contributing Forces:

- Our society will be more mobile, diverse, and informed
- Populations will continue to increase, especially in the urban areas
- More lives will be maintained and extended through medical science and health care, showing a rise particularly in the infant and "over-65" population
- More dense populations will create problems of privacy and stress
- The needs of society and the individual will become more explicit
- The work force will increasingly be composed of a higher proportion of professionally and technically trained personnel
- Changing values of the population will require social and cultural accommodations
- Technological and social developments will create increasingly complex problems which will require individuals working in groups to achieve desirable solutions.

Implications:

- A significant move will occur towards a nationally standardized curriculum involving the basic skills of arithmetic, English, science and reading which will probably be taught via high frequency signal techniques; e.g., radio, T.V., microwave, satellite transmissions, etc.
- Learning facilities will have to be designed and/or modified to accommodate increasing populations and diversified teaching techniques
- More and better research, development and evaluation must be carried out if the capabilities for mass, but quality education are to be realized
- Although increased population mobility argues strongly for some curriculum standardization, it does not preclude but encourages the application of individualization in the learning situation.

Suggested Activities:

1. Research -- Assuming that a basic skill curriculum has been defined, media research must determine the most effective components to be utilized in bringing about learning outcomes; e.g., what medium works best in teaching various aspects of arithmetic to particular groups of learners (i.e., intelligence, social class, age level, etc.). In addition, attention must be given to the effects of individual versus group settings upon instruction in relation to such factors as stress, learning efficiency, cost-benefits, etc.

2. Evaluation -- In order to provide adequate evaluative data to decision makers regarding the adoption or modification of newer forms of instructional media, both formative and summative evaluations must be carried out. This will require a substantial increase in the number of people trained in both formative and summative techniques; i.e., developing instruments, collecting information, analyzing data and displaying results for both process and outcome effects.

3. Design -- Media designers must translate knowledge about learners, media, and content into instructional specifications. This will call for knowledge about newer unique qualities of transmission media (e.g., TV and radio linked to computers) and compatible and effective formats appropriate to mobile and diverse learner groups.

4. Production -- Expanded production manpower and facilities will be required.

5. Logistics -- Multiple new learning spaces must be provided, e.g., individual learning carrels in schools, libraries, homes, public buildings, and others, equipped with appropriate audio and visual devices, tied to computer and other information processing facilities. In order to maintain such learning spaces, qualified technicians and trainees must be prepared.

6. Utilization -- Adequate utilization will require that both supervisors of learning situations and learners themselves be acceptant of the standardized basic curriculum and trained in determining instructional goals, effectively controlling equipment for learning, selecting appropriate modules, and assessing achievement. Particular emphasis should be placed in applications of simulation and gaming to learning situations involving complex social interaction.

7. Management -- Media services will be needed at all levels: national, regional, local. Those responsible for managing media services must have a positive attitude toward a nationally standardized basic skills curriculum if an effective media program is to be operated. New media equipment and facilities must be planned, acquired, and supervised; qualified personnel must be obtained which includes specialists in electronics, computer programming, instructional designing, evaluation, and others. To coordinate a national standardized curriculum, accurate and rapid information exchange is essential.

Projection #2: Computers will be increasingly used to manage information, facilitate research, and provide instruction.

Contributing Forces:

- The accumulation of scientific and technical information is exponentially increasing
- More complete and updated information will become available for all appropriate uses
- Decision-making at all levels will call for the rapid retrieval of updated and reliable information
- Technology-controlled simulated learning experiences will achieve high performance
- An information storage and retrieval facility will be increasingly employed to support individualized programs
- To achieve effective organizational decisions, institutions will become more functionally geared to information transmission and utilization.

Implications:

- Access to computers will greatly expand to include all aspects of instruction involving all media functions
- Computer controlled retrieval systems which permit rapid access to information through many media will become commonplace.

Suggested Activities:

1. Research -- Larger and more diverse learner populations can be sampled with greater controls to provide answers to media problems (see Projection #1-Research). Research must be conducted to determine how the computer can be utilized to merge into a single system for learning, such media as books, journals, libraries, laboratories, studios, motion pictures, phonographs, telephones, tape recorders, radios, programmed learning or teaching machines, television and satellite transmissions. In addition, time-sharing of computer use must be studied to permit many learners to use learning systems simultaneously.

2. Evaluation -- Because of its capacity to rapidly compile, process, and retrieve large quantities of data from many diverse situations, evaluators will use the computer to determine the instructional effects of a particular medium (including the computer itself) used in a specified manner. Furthermore, they will use the computer to assemble, administer and score media training examinations and to compare the outcomes with established standards.

3. Design -- In order to provide decision makers and learners with data essential to their needs, designers must specify what information elements should be stored in the computer, how outputs should be displayed, how these displays should differ to satisfy various users, and what strategies should be employed to obtain maximum effectiveness from the system. Example: A Media Director confronted with determining facilities requirements for the future might wish to consider various alternative projections such as learner population trends, newer equipment designs, changes in individualized learning settings, funding constraints and potentials. Other design activities might include developing specifications for using the computer in physical object retrieval and simulating learning conditions to test our learning principles. Such designs are necessary to permit effective computer programs to be written.

4. Production -- Activities in production will include development of various computer programs for instructional purposes. In addition, computer control of production equipment is possible, e.g., lettering equipment, diazo transparency equipment, slide and tape duplication, catalog printing.

5. Logistics -- Logistics activities will include the maintenance of computer-access equipment (electronic and physical facilities), storage of parts, and the operation of computer-controlled equipment for the retrieval of physical objects and information. Scheduling (booking) of materials and record keeping is expected to become computerized.

6. Utilization -- All users, and particularly teachers, must learn to (1) accept and use the computer as a standard instructional and management tool, and (2) provide essential inputs to the design and evaluation of learning systems which utilize computers.

7. Management -- Media management will use computers for decision making, record keeping, information dissemination and staff training. Qualified personnel who are skilled in all aspects of computer use in instructional media must be selected and/or trained.

Projection #3: The systems approach will be a significant methodology employed in identifying problems and organizing resources for their resolution.

Contributing Forces:

- Teachers will increasingly demonstrate capabilities in such areas as the design and development of instructional media for specific learners
- Educational goals will be increasingly stated in more measurable terms amenable to the analysis of costs and benefits of alternative programs to achieve the defined goal
- Teams of specialists will be called upon in the development of instructional systems
- Instructional materials will be designed and developed to support specific learner objectives
- Modules of instruction will serve as enabling links within the larger instructional program.

Implications:

- Media personnel will accept and become skilled in systematic techniques for improving instruction
- Teams of differentiated staff and learners will assemble to design, develop and/or implement new instructional systems
- Instructional team members will carry out a set of functions which accumulatively provide the support required for a population of learners to effectively pursue specified goals
- Feedback systems must be established which allow group representation, i.e., students, teachers, citizens, etc., to express the needs of learners.

Suggested Activities:

1. Research -- Continued and expanded development of systematic development techniques for improving instruction must be carried out. Emphasis should be given to such areas as: (1) educational problem identification and management controls, i.e., instructional objectives, cost accounting, staffing assignments, resource availability, etc.; (2) instructional design specifications, i.e., terminal performance standards, criterion measures, media forms, settings, learner responses, etc.; and (3) production and testing, i.e., fabricating prototypes, field testing for effects, modifying and mass producing, etc.

2. Evaluation -- Evaluation activities must concentrate on assessing the effects of systematically developed instruction both during the development process, which provides for appropriate changes in design, and following completion, which permits assessment of impact.

3. Design -- The systems approach is a design tool of which greatly expanded applications are expected. Design examples might include: the development of media components to be used with computers in instruction, simulations for learning to handle stress in group settings, modules of instruction which permit learners to develop self-study patterns related to various subject matter areas, etc.

4. Production -- Products will follow from systematic instructional designs. However, production problems must be considered during design, and at times will require production personnel to participate in achieving realistic designs. (They will particularly input concerning production methods and costing.)

5. Logistics -- Since the function of logistics plays a major part in the successful implementation of instructional systems, logistics personnel may be required to serve as members of the design team, (particularly concerning such things as packaging, shipping of materials and problems of computer access.)

6. Utilization -- Media users will be important in the design of instructional systems since they are insightful about practical applications of media in instruction.

7. Management -- Media management personnel must be convinced of the importance of the systems approach to instruction and sufficiently knowledgeable about it to be able to select qualified staff and provide the resources necessary to permit systematic instructional development to occur.

Projection #4: Educational programs will be reconceptualized, expanded, and developed at all levels.

Contributing Forces:

- Increased populations and a better understanding of individual differences will create pressures that force the evaluation of existing and the development of new educational programs

- Increased longevity and the rapid transition of jobs will require a new look at vocational preparation, especially as it relates to a career area and the systematic renewal of skills

- The nature of job in man's life is changing, with avocational interests and leisure time being important aspects to understand in terms of satisfaction and productiveness and a contribution to society

- Early childhood programs will increasingly emerge to develop "pre-school" intellectual, creative, and emotional competence

- New educational programs will expand to include the community as an instructional context.

Implications:

- Increases in population, greater diversity and extended life span of individuals, urgency to deal earlier with the educational needs of children, rapid accumulation of knowledge of all types, growing concerns about benefits deriving from leisure time and many other such factors, will require that educational programs be more efficient in the expenditure of all available resources. Examples might include: greater use of time saving and effective media, expanded applications of newer technologies — such as the computer — which are selected to accomplish desirable goals that otherwise could not be achieved, extension of learning settings beyond the school building which include the home, industrial, natural, and other community facilities.

Suggested Activities:

1. Research -- The above implication suggests numerous topics for research. For example, what media will be most effective in communicating? How can leisure time instruction be incorporated in educational programs? How can computers be employed to serve a wider learning setting which extends beyond the typical school building? How can other learning settings, such as out-of-doors and industrial sites be efficiently utilized as instructional media?

2. Evaluation -- Evaluation activities must parallel the extensive suggestions listed above if media persons in responsible positions are to make wise decisions. Evaluation must deal with larger populations, more diverse learning settings, and vastly increased applications of media.

3. Design -- Designers will work with many new and unfamiliar elements in developing instructional specifications for such areas as (1) mediated instruction beamed into the home, (2) media formats for pre-school learners, (3) strategies for coordinating home and school components of instruction, etc.

4. Production -- Production in greater quantities will be necessary. New technologies will appear to produce complex materials required in computer assisted instruction.

5. Logistics -- Support of these expanded programs will call for greatly increased logistics services. This will include: higher speed transportation systems, computerized order and handling processes, large stocks of replacement parts in the form of preprinted, pre-assembled, miniturized modules, rapid and damage resistant packaging, etc.

6. Utilization -- Expanded attention must be given to the training of utilizers. Included will be parents, industrial personnel, civic leaders, public servants, etc. Training must include affective, cognitive, and psychomotor elements.

7. Management -- Media management must be prepared to deal with expanded services. Additional management personnel must be identified and trained to meet needs for increased departmentalization. Careful attention will have to be devoted to cost accounting and cost benefits analysis to both justify and maintain operation.

Projection #5: Educational coalitions and collaborations will increasingly form to promote common goals of two or more groups, agencies, or institutions.

Contributing Forces:

- Goods and services affecting city, school, and health care services will be increasingly jointly purchased
- New forms of government (e.g., regional planning units) will emerge in opposition to centralized government functions at the federal and state level
- District and county agencies will provide more centralized services for elementary and secondary schools, e.g., coordination of training, instructional design and development, storage, retrieval, dissemination, and maintenance
- State and federal education agencies will increasingly collaborate with local education programs in support of research and development, financial assistance, information documentation, dissemination, planning, and certification standards
- Business and industry will increasingly establish collaborative working relationships with schools, colleges, and educational agencies for the development, dissemination, and utilization of mediated instruction, especially in regard to instructional packages of both materials and devices.

Implications:

- Instructional media components will become available having qualities which permit common sharing among agencies
- The goals of collaborating agencies (educational and otherwise), as they relate to the use of media in instruction, will allow common utilization of instructional media
- Personnel having sufficient skills and competencies to establish coalition and collaborative relationships among various agencies will become available.

Suggested Activities:

1. Research -- Extensive research must be conducted to determine (1) the means for identifying commonalities among the goals of various institutions, (2) the specific sub-goals of various institutions that suggest potential joint use of media, (3) which media can be most effective and efficient in shared use, (4) the management skills required in establishing and maintaining collaborative relationships.

2. Evaluation -- In order to carry out effective sharing of media services among diverse agencies, evaluation techniques and procedures which meet decision needs must be developed and utilized. Attention must be given to such things as: determination of indicators which would be acceptable as evidence of effective sharing, instrumentation for recording the indicators, formats for reporting data arrays which are appropriate to each coalition setting.

3. Design -- Designers must become aware of the unique differences separating each of the coalition members so that they can produce instructional designs which are jointly compatible; i.e., the goals, the settings, forms of media, message formats, learner differences, etc. Designers must know how to interact with and draw upon the knowledge of resource personnel in each of the collaborating agencies.

4. Production -- As new technological developments occur, new knowledge and techniques regarding media production must take place. Other than this, however, it appears that current production know-how is appropriate to handle production needs, given sufficient dollars to buy manpower and facilities. New coalitions might make it possible, through shared costs, to support production operations which might otherwise be basically impossible.

5. Logistics -- Some logistics activities in coalition operations, will call for expanded capabilities. For example, distribution services will confront larger numbers of people in more diverse settings; increased coordination among coalition members will be required irrespective of centralized or decentralized facilities; record keeping will confront a greater diversity of data.

6. Utilization -- Shared use of instructional media among diverse coalition users will permit exchange of knowledge concerning differing techniques of application.

7. Management -- Coalitions will place significant demands on the management of media services; i.e., planning, coordinating, scheduling, financing, selecting and training staff, disseminating information, and handling records.

Projection #6: Those who are affected by a given program will increasingly be represented in judgments regarding its direction and process.

Contributing Forces:

- Individuals will demand more direct influence on the expenditure of taxes for education, especially with reference to the costs and benefits of a stated program
- The strain between individuals and bureaucratic structures will motivate more individuals to gain greater participation in decision-making that influences them
- Schools will provide educational experiences that will prepare learners to be effective contributors to society. Determination of the needs of learners will be accomplished through group representation, i.e., students, teachers, citizens, etc.

Implications:

- Management of media services must be knowledgeable of and skilled in (1) forming representative groups; (2) reaching decisions in groups having representation of those affected; (3) translating representative group decisions into acceptable operations; and (4) accounting for the cost of media services in terms of benefits derived.

Suggested Activities:

1. Research -- Research must be conducted to determine: (1) methods of forming group representation; (2) effective decision processes in representative group settings; and (3) techniques for translating group decisions into operational specifications.
2. Evaluation -- Evaluation techniques and methodologies must be developed and employed which are appropriate to provide decision makers evidence of effectiveness of various forms of representative group formation and consequent media services operation.
3. Design -- Designers will be called upon to justify the rationale underlying their instructional design specifications. Attention to research findings and other empirical evidence will be essential.

4. Production -- Production staff will be increasingly required to justify production costs against quality and utility of products. Improved techniques for mass production operations must be continuously assessed and adapted without loss of quality.

5. Logistics -- Similarly to production, logistics services will increasingly be expected to justify operational costs.

6. Utilization -- The users of instructional media will be affected in two directions. Representative decision bodies will: (1) demand greater justification for the application of unique and expensive media in classroom instruction and (2) expect increased uses of certain forms of newer media not currently accepted by local teachers but shown to be effective elsewhere. The user will have greater opportunity, given his ability to do so, of influencing various representative members regarding the effective uses of particular innovations.

7. Management -- Those that manage media services must become highly skilled in: (1) gathering, consolidating and disseminating cost-effectiveness data in meaningful language; (2) establishing decision groups that truly represent the various populations directly affected by media programs; and (3) getting productive work from the diverse membership constituting the representative groups.

Projection #7: Individualized instructional programs will increasingly emerge to meet the needs of learners at all levels.

Contributing Forces:

- Educational goals will be aimed more exclusively toward the individual in terms of his direction, fulfillment, and commitment
- Learner goals will be derived jointly by teachers and learners to represent the needs of the individual learner
- An increasing proportion of learner goals will become related to emotional, cognitive and psychomotor characteristics
- The central instructional methodology for carrying out educational goals will focus on relevant strategies of learning for the individual.

Implications:

- Instructional media are amenable to and effective in individualizing learning
- Instructional media personnel will be sensitive to and knowledgeable of the importance of individualizing instruction
- Instructional media personnel will be skilled in the applications of media to the individualizing of instruction
- Individualized learning materials will be developed, tested, and mass produced for use by individuals in various settings
- Individualized instruction will require the modification of many existing facilities and the acquisition of supporting materials and devices.

Suggested Activities:

1. Research -- Concentrated study must be directed towards discovering which media, or combinations thereof, are most effective and efficient in individualizing instruction. Particular attention must be given to independent study, flexibility and adjustment to the differences of learners.

2. Evaluation -- Evaluation methodologies must be developed and employed which appropriately measure the effectiveness of individualized packages in producing expected outcomes.

3. Design -- Those responsible for preparing instructional specifications must be knowledgeable of the state-of-the-art in media applications in individualizing instruction; e.g., student and/or teacher derived learning goals, current technological developments, diagnostic and instructional procedures. It will be necessary that flexibility be built into educational media designs to permit individualized goals to be achieved. This must be accomplished by utilizing "standardized," i.e., mass produced and procured media.

4. Production -- Production technology must keep pace with designs for individualizing instruction by providing quantities of materials compatible with newer technologies; e.g., materials amenable to physical computer retrieval, audio lessons transmitted via high frequency signal techniques, and multi-media programs in simulated settings.

5. Logistics -- A major factor in logistics services will be maintenance and repair of computer controlled equipment and other sophisticated devices. This will require either retraining incumbents or obtaining additional qualified personnel.

6. Utilization -- Derivation of individualized learning goals, whether they be accomplished through teacher only, teacher-learner, teams of teachers, or learner only means, will become a major consideration in employing media in individualized learning. Managing the instructional setting under individualized conditions will be an equally critical requirement.

7. Management -- Supervising the training of users, obtaining computer controlled and other sophisticated equipment, forming communication and computer-use networks through coalitions, acquiring qualified personnel and adequate facilities, and justifying costs of such efforts will be major concerns of media managers in providing media services to support individualized instruction.

Projection #8: Technology will be increasingly used to transmit messages to specific learner populations.

Contributing Forces:

- Schools will be responsive to and supportive of new developments and innovations that improve the quality and efficiency of learning
- Technological developments will be continued and improved with mass production decreasing costs and increasing the feasibility of utilization
- Intensive preparation of teachers in the application of instructional technology will effectively change instructional methods and learner outcomes
- Specific learner objectives will be increasingly defined and instruction designed as modules within the larger program of study.

Implications:

- More subtle and sensitive understandings will emerge regarding the mediating devices which are most effective in transmitting specific messages to specific learners.
- Educational personnel will increasingly accept technological developments that can be shown to improve the efficiency of the learning process, assist in making the learning relevant to the individual and proportionately reduce costs to an acceptable level (a level the public will support).
- Feasibility of employing technology must be judged against goals of instruction, learner populations, and resource constraints.
- Instruction will shift significantly from a teacher-centered to a pupil-centered orientation. Such a shift will require a redeployment of instructional personnel resources including use of differentiated staffing.

Suggested Activities:

1. Research -- Media research must discover which mediating devices are most effective in transmitting various types of messages to different learners.

2. Evaluation -- Judgments must be made regarding the effectiveness of both the instructional media and the media services. As newer technological innovations emerge and are employed, appropriate evaluation techniques must be developed and applied accordingly.

3. Design -- Designers will specify learning experiences calling for performance based modules which can be combined in different ways to satisfy larger learning goals.

4. Production -- Newer techniques for mass producing with proportionately lower per unit costs must be developed if feasible applications of newer innovations are to result.

5. Logistics -- Greater demands will be made on logistics services to make more rapid distribution of greater quantities of materials. In addition, schedules for delivering desired media to particular users at precise times must be carefully planned and executed.

6. Utilization -- Those who manage the instructional situation must become knowledgeable of newer instructional developments and innovations and have a positive attitude with respect to their use. They must be skilled in making judgments regarding what mediating elements are most appropriate for any particular learning problem and be able to employ the essential media in an effective manner.

7. Management -- If increased use of technology is to be effectively employed in instruction, media management must see to the adequate staffing and training of essential personnel. It must also make certain that necessary information be provided each person when needed, i.e., information concerning new instructional innovations, improved production equipment, more efficient techniques in logistics services, budgetary constraints and opportunities, materials acquisition, newer forms of organizational structures and management procedures, etc. Efficient and effective forms of inservice training, particularly in terms of users of media, must be planned and implemented.

Part V

Annotated Bibliography

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INTRODUCTION

The purpose of the annotated guide is to identify sources in the professional literature which have relevance for the training of media personnel. Particular interest was given to articles and other written documents which would provide information on the competencies and tasks required of persons in their jobs, and the background and training requirements necessary for them to successfully perform the activities required in their job. This information provides a supplementary basis for developing guidelines for the training of media personnel.

In the annotated guide articles, reports and similar documents have been organized under the following headings: (1) Functions of the Audiovisual Center, and the Relationship of Audiovisual and Library Services; (2) Educational Technology and Instructional Systems; (3) Media Personnel: Functions and Competencies; (4) Training of Media Personnel; (5) Future Directions in Media and Instructional Technology; (6) Selected Proposals for Media Training; (7) Media Competencies for Teachers; (8) General Literature on Media Research, Selection and Evaluation; (9) Certification Requirements For Media Personnel; and (10) Further Information Relating to Certification and/or Standards.

The scope of this document is, for the most part, limited to the literature of the past ten years, with emphasis on more recent writings. This guide was not intended to include all available literature related to the training of media personnel, but it does provide a reasonably comprehensive and systematic basis for approaching the study of training needs in this field.

SECTION I

Functions of the Audiovisual Center, and the Relationship of Audiovisual and Library Services

Overview of Section I

This portion of the annotated bibliography includes selected articles dealing primarily with the functions performed by personnel within media or audiovisual communications programs and instructional materials centers. A few articles have also been identified which deal specifically with library functions, and with the relationships between audiovisual and library services.

Other sections of this guide include reference to additional sources which cover similar subjects in a less direct manner. In many cases the inclusion of a reference source in any particular section was necessarily an arbitrary decision, since an article usually covered several subject headings.

1. Case, Robert N. "And Away We Go. .!" School Libraries. Summer, 1967, pp. 43-46.

   An account is given of expanded library services in ten midwestern states.

2. Chisholm, Margaret. "Change or Progress? Guidelines for Developing Auxiliary Media Centers." School Libraries. Winter, 1969, pp. 13-16.

   A set of criteria is established that, if followed, could theoretically lead to an effective resource center for independent study.

3. DeBernardis, Amo, Victor W. Doherty, Errett Hummel, and Charles William Brubaker. 1961. Planning schools for new media. (Prepared in cooperation with the U. S. Dept. of Health, Education and Welfare, Office of Education). Portland, Oregon: Portland State College.

   A guide prepared to assist school board members, school superintendents, and architects in planning school buildings so that teachers can make full and effective use of modern media of instruction. The ever-increasing use of films and other projected matter, radio and TV, electronic learning laboratories, closed-circuit TV, inter-communication systems, reading accelerators, and other instructional media is requiring that new design for school buildings be provided to accommodate the proper use of the new media and modern teaching technology. Illustrated to show specific details for design.

4. King, Nancy R. and Joanne Lincoln. "The Role of Pilot Programs in School Library Development." School Libraries. Summer, 1968, pp. 18-21.

   Discussion of the Atlanta Public School System's pilot programs designed to help minimize staff shortages and release trained librarians for professional duties.

5. Knirk, Frederick G. "Basic Functions of an A-V Program." American School and University. April 1968, pp. 43-44.

   Three main functions of an audio-visual program are defined and discussed. They are as follows:
   1) "To provide a good teacher preparation background in instructional technology;
   2) To train instructional technologists to study the area in depth; and
   3) To provide "the facilities and equipment necessary to help practicing educators improve their own instruction."

The author differentiates between the audio-visual program designed for graduate education and undergraduate education concluding with major points to consider in regards to design, facilities and equipment.

6. Martin, James S. "The Audio-Visual Department Comes of Age." American School and University. February 1968. pp. 24-27.

After listing the many activities identified as media center functions, the author concludes that colleges and universities should have a large center. The people engaged in directing media programs should consider part of their job as that of innovating, encouraging new approaches to teaching and assisting in the establishment of programs of merit.

7. Murdoch, Faith T. "The Pacific States Take a Giant Step." School Libraries. Spring, 1968, pp. 25-28.

Discussion centers around the progress made in libraries and audiovisual centers in the states of Oregon, Washington and Hawaii. Specific libraries and schools are mentioned.

8. Norberg, Kenneth D. "Library and 'Audiovisual' . . .One, Two, or More?" School Libraries. Summer, 1967, pp. 7-8.

Emphasizes importance of understanding the relationship of school libraries and audiovisual centers to each other. Rather than to concentrate on the phenomenon of overlap, or impingement, as it relates to jurisdiction or control, it is suggested that the focus of attention should be on the more germaine nature of the changing character of both fields.

9. Purington, Bruce R. "The Instructional Materials Center." Music Journal. March 1968, pp. 115-116.

Discussion centers around definition of the instructional materials center and a breakout of the four main functions performed. The functions listed are:

1) A service agency - advancing the objectives of the educational unit.
2) A teaching agency - stimulating interest and supplying a vast variety of materials.
3) A materials center - housing a variety of materials.
4) A reading-viewing-listening center - guiding, selecting and furnishing a room for these activities.

The remaining half of the article deals with music education and its role in regards to the instructional materials center.

10. Shelburn, Shirley J. "Stop 'Grieving Quietly' . . .A Proposal for Meeting Staff Needs." *School Libraries*. Summer, 1968, pp. 55-57.

Discusses the inadequate staffing of school libraries in reference to the high expectations usually exhibited concerning library services.

11. Trenhome, A. K. "Diagram of Staff Relationship, Portland Public Schools." *Audiovisual Instruction*. February 1967, pp. 138-139.

Chart shows integrated library - media organization of Portland Public Schools.

12. Wheeler, Robert C., et. al., *Elements of an Effective Audiovisual Program, A Handbook for Wisconsin Educators*. Wisconsin Department of Public Instruction, 1966. 56 pp.

This handbook is designed to be of assistance to all teachers regardless of whether they have had formal courses in audiovisual instruction or not. The philosophy underlying its existence is stated in the introduction as:

> "Teachers should use any and all of the capabilities of modern technology which will produce the desired results to the greatest degree. Educators have the responsibility of seeing that schools function in such a way as to produce the greatest amount of the desired learning in the shortest possible time and at the lowest possible cost, both in terms of dollars and human effort.
>
> Research shows that good use of educational communications media will produce the best possible learning environment.
>
> Every school district and every school building should have, as a basic part of its educational plan, all the elements of a media program."

The elements of a good program are listed as: commitment, facilities, staff, budget, inservice training, materials and equipment, and evaluation. A chapter is devoted to each of the elements with a bibliography included at the end of each chapter for further reference.

The chapter on "Commitment" considers such topics as: a rationale for helping others develop a commitment, and research. The chapter on "Facilities" deals with: levels of instructional materials centers, instructional materials centers, relationship of the materials center to the library program, three aspects of concern to the school administrator (materials, availability and utilization), dimensions and program of an instructional center and classroom facilities. The chapter on "Staff" includes: personnel guidelines for elementary and secondary education, descriptions of the functions of the audiovisual director and coordinator. The chapter on "Budget" includes topics such as: incidental versus deliberate budgeting, director's responsibility, planning and recommendations. The chapter on "Inservice Training and Development" deals with teacher training sessions, and objectives. The "Materials and Equipment" chapter deals with: variety and quantity, selection, and sources of equipment and materials. The chapter on "Evaluation" includes standards by which to evaluate school system educational media services, curriculum and instruction, the media center, physical facilities, staff and budget.

The appendices to this handbook contain: a page of charts on selecting the correct screen size; an "Instrument for Self-Evaluating an Educational Media Program in School Systems;" "Quantitative Guidelines for the Audiovisual Communications Field;" and the "Wisconsin Administrative Code."

13. Wyman, Raymond. "The Instructional Materials Center, Whose Empire?" Audiovisual Instruction. February 1967, pp. 114-115.

Briefly mentions quandary over library audiovisual center divisions and suggests that possibly neither should gain precedence nor be combined in their traditional forms.

14. _______________. "Relationship of Library Science and Audiovisual Instruction." Audiovisual Instruction. February 1967, pp. 100-103.

Discusses current need for a clear definition of the functions of the library and audiovisual centers. A suggestion is made that the roles of the two institutions may be quite different. Definitions by various leaders in the fields are presented.

15. Joint Committee of the American Association of School Librarians and the Department of Audiovisual Instruction of the National Education Association. 1969. Standards for school media programs. Chicago, Ill.: American Library Association. 66p.

Prepared by a joint committee of representatives of twenty-eight professional and civic associations, the Standards were hailed as a major educational event in 1968. "For the first time, an authoritative guide for all equipment, materials, and personnel is available to every school . . . Significant advances in the number and quality of media centers are bound to occur" as a result of this publication. The Standards set up national guidelines for media centers, providing every school with a measure by which to evaluate the adequacy of its media center. Standards cover staff (personnel); facilities (reading room, additional space); collection (books, magazines, newspapers, filmstrips, films, recordings, slides, art prints, globes, transparencies, etc.; and faculty library. These national standards provide guidelines for media programs of good quality and establish criteria for media services, resources, and facilities essential to the educational process, as well as acting as stimulus to correct present deficiencies.

SECTION II

Educational Technology and Instructional Systems

Overview of Section II

In this section articles and other published documents are listed which deal with the broad area of educational technology and instructional systems. These references bear on problems and issues associated with the preparation of media personnel in terms of general trends and developments which will help determine the roles and functions of media and communications specialists. More than thirty references are included which together represent the diverse issues and points of view currently proposed by leaders in the field of educational media and technology.

16. Berlo, David K. "Instructional Communication and Technology - - Converging Concepts." in Technology - - Education, ed. Donald P. Ely, Syracuse University Press, 1966, pp. 7-17.

"Dr. David Berlo sets the stage for the chapters which follow with his analysis of the role of communication strategy in the teaching-learning process. He delineates the crucial contributions of psychology, sociology, and social pyschology as backgrounds for communication. The general application of technology per se is challenged. A program for preparing the communication strategist in education is outlined. This is a frank assessment of the state of instructional technology based on its historical development, its philosophical rationale, and its operational dimensions. He provides practical guidelines for the future growth of the field."

17. Bern, H. A. "Audiovisual Engineers?" AV Communication Review, July - August, 1961, Vol. 9, pp. 186-194.

"This article . . . presented some of the 'qualifications' of audiovisual communication to absorb and transmit to the field of education as a whole the impact of the technological revolution of our day. To support the claim of closeness of relationship between audiovisual communication and technology, evidence was offered in relation to (a) suitability of theoretical concepts, (b) orientation of leadership, and (c) research rooted in engineering frameworks. Finally, the hypothesis was offered that the underlying basis for these qualifications is a concern with information and communication theory which audiovisual communication has 'absorbed' principally through contact with the field of Human Engineering."

18. Blaschke, Charles L. "Educational Technology -- A New Perspective." Educational Technology. January 15, 1968, pp. 17-18.

The author raises some fundamental questions that technology and individualized instruction have brought to the fore. He concludes that "rather than more financial support for technology, it might be appropriate for those who allocate dollars to entertain some of these questions -- concerned with the instructional environment of education, which continue to thwart the application of sophisticated educational technology to improving the quality of education for all children."

19. Bondra, George. "Harnessing a Reform in Curriculum to the Revolutions in Technology: A Case Study." in Technology - - Education, ed. Donald P. Ely, Syracuse University Press, 1966, pp. 21-44.

"George Bondra contributes a case study of innovation in a public school system. He develops the stages of reform movements in general and interprets these stages in light of the Bedford Public Schools' program. The final portion of his paper is a depth analysis of the theoretical bases of social changes with the concept of entropy as the focal point."

20. Bright, Louis R. "Educational Technology as an Approach." Educational Technology, January 15, 1968, p. 8.

This article discusses briefly two principles which argue for the utilization of educational technology:

1)"The objectives of any educational system should be designed to create behavioral changes in the students, to make them better able to cope with or enjoy life than before; and
2) the course, not the student, is at fault if the desirable change in student behavior does not occur."

The author concludes that since the emphasis of educational technology is on student achievement it is synonymous with individualized instruction.

21. Brown, James W. and Kenneth Norberg. Administering Educational Media. McGraw-Hill, 1965, 355 pp.

This book "considers educational media administration in all its modern aspects, and with regard for the complex problems involved in the rapid expansion of instructional technology. It is both a theoretical and practical guide for the administration of audiovisual or newer media as well as printed materials designed for pre-service and in-service teachers, media specialists, and school administrators.

It is intended for courses in educational media administration, but media specialists and general administrative officers with responsibilities for developing and organizing technological resources will find the information very useful.

Throughout the book, the authors emphasize that educational media of all kinds -- prints, visual, audio, and real -- deserve comprehensive coordination, recognizing that this can be accomplished through a variety of administrative patterns suited to the needs and tastes of individual institutions or systems.

Policy guidelines and detailed practical media programs at the several administrative levels are discussed. Levels covered are: The single school, the county or district, the institution of higher learning, and the state department of education.

The various media are treated in detail, with emphasis upon special problems involved in the use of the newer media as well as the coordination of the total complex of instructional resources. Special attention is focused on programmed learning.

Case studies are used throughout to clarify how general principles apply to real problems encountered in the educational media field. Up-to-date bibliographies are included at each chapter end."

22. Bushnell, Donald D., ed. The Automation of School Information Systems. Monograph No. 1, Department of Audiovisual Instruction, 1964, 134 pp.

This monograph contains a report on a workshop sponsored by the American Educational Research Association, the Association for Educational Data Systems, and the California Development Corporation.

The purpose of the workshop is stated as being to bring together the leaders in the field of EDP technology in school systems in order to "avert unnecessary redundancy of effort in the field, establish channels for communication and computer programs."

In the introduction by Don D. Bushnell, four main "currents of change" in American education are identified as: "new concepts of learning, new curricula, new instructional administrative support systems technology, and alterations in school facilities in support of educational innovations." The author points out how these currents affect the EDP system in the direction of extending EDP's focus from emphasis on ONLY new ways of processing test scores, pupil personnel records and reports et. al. to research and development efforts related closely to the new trends.

The contents, under six main topics include: I "Electronic Data Processing and School Administration"; "Introduction," Alvin Grossman; "Data Processing and School Administrative Services," Elmer Wagner; "The School Information System," Alvin Grossman; "Electronic Data Processing and the State Department of Education," John E. Bicknell; "The Automatic Scoring and Processing of Test at the State University of Iowa," D. Peter Wahl, II "The Automation of Scheduling Procedures": "Introduction," G. Ernest Anderson, Jr.; "An Approach to Scheduling Control in a Continual Progress School," Donald G. Marsh; "Scheduling and Related Administrative Problems," James F. Blakesley; "Boolean Isomorphic Structures in an Educational Scheduling Model," A. G. Holzman and I. B. Turksen; III "The Retrieval of Educational Information": "Introduction," Allen Kent; "Information Retrieval Systems and Education," Harold Borko and Don D. Bushnell; "Information Retrieval Research at the University of Pittsburg," William Asher; "An Information Retrieval System for Counseling and Guidance," John F. Cogswell; IV "Simulation and Modeling for Educational Decision Making": "Introduction," James H. Beaird; "Simulation as a Tool for Education," Don D. Bushnell; "Computer Simulation

- - A Position Paper Revisited," James H. Beaird; "Decision Making in Simulated Teaching Situations," M. C. Wittrock; "Simulation and Modeling for Designing School Bus Routes," R. A. Boyer; "Modeling the Instructional Process," Frank A. Yett; "Computer-Based Instructional Systems": "Introduction," "Processes at Arizona State University," Richard E. Schutz; "What Are the Limits of Programmed Instruction?" Harry F. Silberman; "Research at IBM in Computer-Based Instruction," Werner G. Koppitz; PLATO: "Research in Automatic Teaching at the Coordinated Science Laboratory, University of Illinois," Donald L. Bitzer; "Current Trends in Programed Instructional Research at System Development Corporation," John E. Coulson; "Needed: An Auto-Instructional Approach to Adult Education," David S. Bushnell; VI "Systems Design and Analysis": "Introduction," Richard Harsh; "Total Information Systems Design of a University," John H. Hamblen; "System Design for Schools," R. L. Egbert; and "Communication Difficulties in Total System Design," Ellis P. Myer.

23. Ely, Donald P., ed. *Technology* — *Education*. Syracuse University Press, 1966, 109 pp.

This book consists of a series of papers presented by various researchers, administrators, communicators and producers at a conference to discuss education and technology July, 1965 at Syracuse University. Chapters include: "Instructional Communication and Technology - Converging Concepts," by David K. Berlo; "Harnessing a Reform in Curriculum to the Revolution in Technology: A Case Study," by George Bondra; "Finding the 'Mix' - - An Overview of Recent Developments in Higher Education Through Systems Design," Alexander Schure; "Mass Media and the Crisis in Education," by George Gerbner. Raising the issues created by technology on the educational scene, the authors conclude that change must be "well ordered and geared to progress - not just progression."

24. Ely, Donald P. "Educational Technology as Instructional Communication." *Educational Technology*. January 15, 1968, p. 7.

In the context of the definition of educational technology developed by the Department of Audio-Visual Instructional Commission on Definition and Terminology, the author discusses the science of educational technology as a branch of the larger field of education. The definition used is as follows:

"Educational technology is that branch of educational theory and practice concerned primarily with the design and use of messages which control the learning process.

It undertakes: (a) the study of the unique and relative strengths and weaknesses of both pictorial and nonrepresentational messages which may be employed in the learning process for any purpose; and (b) the structuring and systematizing of messages by men and instruments in an educational environment. These undertakings include the planning, production, selection, management, and utilization of both components and entire instructional systems. Its practical goal is the efficient utilization of every method and medium of communication which can contribute to the development of the learner's full potential."

25. Finn, James D. 1968. "The Emerging Technology of Education." in Instructional Process and Media Innovation, ed. by Robert A. Weisgerber, Ed.D., Rand McNally and Company, pp. 289-327.

This chapter deals with educational technology, its relationship to education as an institution and a process, its history and development, and trends in the future.

26. Gage, N. L. 1964. Theories of teaching. In: Theories of Learning and Instruction. The 63rd Yearbook of the National Society for the Study of Education. Part I, Ernest R. Hilgard, ed. Chicago, Ill.: NSSE. pp. 268-285.

". . . Theories of learning will have greater usefulness to education when they are transformed into theories of teaching." A basic distrinction between theories of learning and theories of teaching is that theories of learning deal with the ways in which a person influences an organism to learn. "Although theories of learning are necessary to the understanding, prediction, and control of the learning process, they cannot suffice in education. The goal of education -- to engender learning in the most desirable and efficient ways possible — would seem to require an additional science and technology of teaching."

27. Gagné, Robert M. 1965. The Conditions of Learning. N.Y., N.Y.: Holt, Rinehart & Winston, Inc. 308p.

Examines some generalizations which the author suggests can be made about several distinguishable classes of performance change (learning), of which he indicates there are at least eight. The "conditions of learning" are described for eight types of learning: signal, stimulus-response, chaining, verbal-associate, multiple discrimination, concept, principle, and problem solving. How instructional media may best be used to facilitate these various types of learning is discussed.

28. Gagné, Robert M. "Educational Technology as Technique." Educational Technology. November 15, 1968, pp. 5-13.

In answering the question "what are the effects of technology on instruction?" the author postulates the following three statements:

1) "Changes in instructional PROCEDURES are likely to be more profound than changes in hardware.
2) In many instances SMALL hardware changes instruction more than big hardware.
3) Hardware, small or big, sometimes makes possible instructional changes that are far-reaching in their effects; however, these depend upon the MANNER OF USE of the hardware."

Rather than to define Educational Technology as hardware, the author uses the term to mean "the development of a set of systematic techniques, and accompanying practical knowledge, for designing, testing, and operating schools as educational systems." Used in this sense, the author feels, technology may or may not involve hardware. Educational change in the direction of individualized instruction, for example, is mainly implemented by software. The author discusses how the practicing educator should view the advance of technology and its implications for instruction in the schools.

29. Gerbner, George. "Mass Media and the Crisis in Education." in Education - - Technology, ed. Donald P. Ely, Syracuse University Press, 1966, 99-109.

"Proposes that technology in education will reach its optimum level when the public acknowledges education's paramount role in society, by economic support equal to that of military investments."

30. Ginzberg, Eli. (ed.) Technology and Social Change. Columbia University Press, 1964, 155p.

This volume is a collection of papers presented in the Columbia University Seminar on Technology and Social Change. It includes "Perspectives on Technology," Charles R. DeCarlo; "The Post Industrial Society," Daniel Bell; "The Aerospace Industry," Earl D. Johnson; "The Dynamism of Science and Technology," William O. Baker; "Productivity and Economic Growth," Solomon Fabricant; "Confrontations and Directions," Eli Ginzberg.

The major ideas and themes of the papers are discussed in an introduction by Aaron W. Warner at the beginning of the book.

31. Glaser, Robert. "Educational Technology as Instructional Design." Educational Technology. January 15, 1968, pp. 5-6.

Article centers around discussions of probability of an unique occupational speciality emerging under the rubric of educational technology or instructional design. This will be comprised of a person, or group of persons, concerned with "the production of educational procedures, materials, and systems." The functions to be performed by the instructional designer are speculated as being:

1) Analyzing the subject-matter domain in terms of "properties of the content to be attended to, the nature of the responses the student makes to the content, and the structural characteristics of the domain."
2) Attending to the characteristics of the students to be taught by determining the "extent to which the students have already acquired some of the things to be learned, the extent to which they have certain content and aptitude prerequisites, and the extent to which their antecedent learnings might facilitate or interfere with the new learning."
3) Guiding the student from the "pre-instructional behavioral state to a state of subject-matter competence." This requires "the construction of teaching procedures and materials that are to be employed in the educational process, taking into account motivational effects and the ability of humans to generalize and extrapolate."
4) "Assessing and evaluating the nature of the competence and kind of knowledge achieved by the learner in relation to some performance criteria that have been established."

32. Hamreus, Dale G. "The Systems Approach to Instructional Development." in The Contribution of Behavioral Science To Instructional Technology: A Resource Book for Media Specialists, Teaching Research, 1969, pp. I-1 -- I-59.

"The primary purpose of this paper is to identify for the reader what is meant by the systems approach to instructional development. If the instructional technologist is to get maximum use from media in improving learner outcomes, he must be able to answer how, what and when media can most effectively be employed. To answer these questions he must know what specific learning outcomes are expected of students. Also, the questions must all be considered within the constraints of the educational industry: learner differences, learner outcomes, learning processes, and the conditions for learning. What this all leads to is the need to manage and operate a set of complex elements that make up the particular sub-system in the educational industry within which the instructional technologist happens to confront an instructional problem.

A twenty-two step maxi- and a six-step mini-systems approach model are presented. The maxi-model is for the educational technologist who has "everything" (support, personnel and facilities, time, money), and the mini-model is for the individual technologist who has limited assistance and support yet is enthusiastic about improving instruction. The dehumanizing issue in the systems approach is discussed. Finally, examples of systems development models are presented, gaps in our present systems approach are identified, and methods for bridging gaps explored. A list of references is provided for the reader who wishes to extend his study."

33. Heinich, Robert. "What Is Instructional Technology?" Audiovisual Instruction. March 1968, pp. 220-222.

In this article two definitions of technology are given as a means of de-emphasizing the "machine" aspect and emphasizing technology as process. The first is Charles F. Hoban's:

"The point here is that the term 'educational media' does not, in itself, suggest the ramifications for research and for educational policy and operating procedures which are inherent in the term, 'technology of education.' Technology is not just machines and men. It is a complex, integrated organization of men and machines, of ideas, of procedures, and of management. The introduction of this complex organization generates many systematic problems that can be and have been ignored or generally neglected in theory, research and practice in education. The term 'educational media' limits, and the term, 'educational technology' expands the areas of theoretical development, research and implementation in education."

The second is John Kenneth Galbraith's:

"Technology means the systematic application of scientific or other organized knowledge to practical tasks. Its most important consequence, at least for purposes of economics, is in forcing the division and subdivision of any such task into its component parts. Thus, and only thus, can organized knowledge be brought to bear on performance."

The author states that the "inner meaning" of technology and the newer media is not simply that more powerful instruments of instruction have been made available but that "curriculum planning and instructional design are thrust into new roles of responsibility, comprehensiveness, and specificity." The shift of attention from teacher to student, increased sensitivity to theories of instruction, and changes in personnel roles are mentioned as some of the results of the entry of instructional technology into curriculum planning.

The latter part of the article deals with the media director and his emerging role in regards to curricular decisions. It is pointed out that media directors should be aware of the total instructional system [concept of systems] and not merely with the subsystem.

34. Heinich, Robert. "Educational Technology as Technology." Educational Technology. January 15, 1968, p. 4.

Article discusses misunderstanding concerning the word "technology" and offers John Kenneth Galbraith's definition of the term. A distinction is made between instructional technology and technology of instruction. Technology of instruction is defined as "used to achieve specific instructional tasks." Instructional technology embraces and subsumes technologies of instruction.

35. Hilgard, Ernest R. 1964. A Perspective on the Relationship Between Learning Theory and Educational Practices. In: Theories of Learning and Instruction. The 63rd Yearbook of the National Society for the Study of Education. Part I, Ernest R. Hilgard, ed. Chicago, Ill.: NSSE. pp. 402-415.

Six steps in research on learning -- from pure research to technological development, are outlined: (1) Animal mazes, conditioning, pursuit learning, etc.; (2) human verbal learning, concept formation, etc.; (3) mathematics, reading, typing, etc.; (4) programed instruction, language laboratories, in early stages; (5) results of step 4 tried in regular setting, and (6) advocacy and adoption -- manuals and textbooks prepared; teacher training undertaken. Steps 1, 2, and 3 come under "pure research"; 4, 5, and 6 under technological research and development. "In order to build a sound bridge from the experimental studies of learning to the classroom, we need a series of steps, for applied science consists of more than applying principles to practice."

36. Hoban, Charles F. 1968. Man, Ritual, The Establishment, and Instructional Technology. Educational Technology 8(20): 5-11. October 30, 1968.

A view of instructional technology as involving the management of ideas, procedures, money, machines and people in the instructional process. Justification of instructional technology comes through its own logic; in general, by the fact that "American schools operate as a formative institution of a highly technological society and should therefore incorporate, as appropriate, this characteristic of the larger society as well as other idealized values." The logic also includes a central concept of instruction as a system, and "not as the installation of appliances, or the design of school buildings in the round. A system is no more or no less than an arrangement in which everything is related to everything else so that the malfunctioning of any part affects the system output or outcome."

37. Humphrey, John H. "Educational Technology - 'Science of the Practical'." Educational Technology. January 15, 1968, p. 9.

Defining educational technology in Websterian terms, "The science or study of the practical . . . .," the author discusses briefly the improvements needed in today's schools.

38. Kliebard, Herbert M. "The Curriculum Field in Retrospect." in Technology and the Curriculum, ed. Paul Witt, Teachers College Press, 1968, pp. 69-84.

This article presents an informative account of the "views of curriculum which have emerged since 1893." The author's analysis of the "effect of the criterion of social utility on curriculum development coupled with his discussion of the closely related dichotomies of the academic and the practical subjects and of college preparatory and non-college preparatory pupils offers a highly useful frame of reference for assessing present and evolving theories of curriculum and educational technology."

39. Knirk, Frederick G. "Technology and Curriculum Planning: Cost-Effectiveness of Instruction." Audiovisual Instruction. March 1968, pp. 261-262.

In attempting to answer the ubiquitous question, "Can we afford to use technology in our school district?" the author poses a typical dialogue which might occur between the instructional technologist and the curriculum planner. The main emphases of the dialogue are: the bases by which the cost-effectiveness of instructional output can be evaluated, the determination of instructional output, the common unit to be used to measure instructional input requirements, the general principles involved and the costs. Each topic is handled in a paragraph.

The conclusion reached is that "researchers, theoreticians, teachers, and designers in instructional technology need to focus on the problems of cost-analysis in education" in order to increase knowledge in that area.

Six additional readings are listed.

40. Locke, Robert W. "Educational Technology and the Educational Publisher." Educational Technology. January 15, 1968, pp. 14-16.

Commencing with Robert Glaser's definition of educational technology which describes process rather than products, the assumptions underlying such a frame of reference are listed:

1)"Different children learn in different ways and at different rates;
2) Different kinds of skills, abilities, knowledge and understanding are acquired in different ways;
3) Likewise, the various elements of instruction themselves have different learning characteristics; that is, one kind of learning is involved when a child reads a page of exposition in a book, and another when he is involved in a classroom discussion;
4) The elements in the learning process should not be considered apart from each other, because almost all of what happens to a child in school has some bearing on his education;
5) As far as possible, any learning system should be self-correcting, which means that it should have some built-in arrangement of evaluation and feedback which can be used to improve it."

The main part of the article concerns itself with the various practical problems of carrying out the process of systematic instructional design. Aspects to be considered are: the objectives, the kinds of learning, the kinds of media to use, evaluation, and marketing. The author postulates that the major marketing thrust of the future may be in teacher-training.

41. Lumsdaine, A. A. 1964. Educational Technology, Programed Learning, and Instructional Science. In: Theories of Learning and Instruction. The 63rd Yearbook of the National Society for the Study of Education. Part I, Ernest R. Hilgard, ed. Chicago, Ill.: NSSE. pp. 371-401.

"The concept of technology as a resource for education is actually two quite distinct concepts . . ." But both have "important relations to learning and behavior theory, on the one hand, and to educational practice on the other." One concept of educational technology refers to the application of physical-science and engineering technology to provide mechanical tools, instrumentation, or "hardware," which can be used for instructional purposes, a reference which in general applies to the use of equipment for presenting instructional materials (projectors, tape recorders, TV, teaching machines, computer-based teaching systems). The other concept of educational technology refers to "technology" in a generic sense, as a derivative or application of an underlying science. The science of behavior, especially learning theory, may be thought of as a "primary 'underlying science' from which applications to a technology of instruction might be anticipated."

42. McMahan, Marie. "A Challenge: The Systems Approach in Development of Media Competencies." Audiovisual Instruction. December 1967, pp. 1060-1063.

Discusses systems' approach to teacher education programs having a media emphasis. There is a brief section on competencies required of media men who would be involved on the instructional staff for such a program. Reference included to Meierhenry study (1966) on media competencies of teachers.

43. Oettinger, Anthony and Sema Marks. "Educational Technology: New Myths and Old Realities." Harvard Educational Review. Vol. 38, 1968. pp. 697-717.

This article discusses and evaluates the claims made about the value of the modern equipment and techniques for the improvement of the quality of education. They give an in-depth discussion of the claim that the modern technology will promote the "individualization of instruction." The types of resistance encountered in the introduction of educational technology into the school are considered. The Watertown (Mass.) Language Laboratory and the Stanford-Brentwood C.A.I. Laboratory are used as illustrations.

44. Saettler, Paul L. "History of Instructional Technology, II: The Technical Development of the New Media." Occasional Paper No. 2, National Education Association, 1962, 68 pp.

Dealing with the historical background of instructional technology, this paper is a comprehensive presentation of the development of the technologies of photography, sound, television and teacher machines. The objective is to provide the reader with "a picture of the complex technical base upon which modern communication devices are constructed." Included is a forward by James D. Finn, a bibliography consisting of 113 entries and a number of illustrations.

45. Saettler, Paul. A History of Instructional Technology. McGraw-Hill Book Co., 1968. 399 pp.

This book covers the development of instructional technology in three parts. Part I deals with the theory and methodology behind its development. Part II covers the technology itself. Part III deals with media research, its background, problems, and prospects.

This volume also includes an introductory chapter concerned with the meaning of instructional technology, a foreword, preface, selected bibliography, and index.

46. Schramm, Wilbur. "Educational Technology and the ERIC Clearinghouse." Educational Technology. January 15, 1968, pp. 10-11.

Article discusses the function of ERIC Clearinghouse at Stanford and lists its priority objectives as:

1) A focus on the science of teaching and learning with the educational media;
2) A collection, abstraction, and indexing of the descriptive and prescriptive literature in the field.

The advice of the reader is solicited at the conclusion of the article on matters relating to these priorities.

47. Schure, Alexander. "Education Escalation Through Systems Design." in Technology - - Education, ed. by Donald P. Ely, Syracuse University Press, pp. 55-77.

Presents the rationale and operation of ULTRA (UnLimited TRaining for ALL). The system is computer-based and self-paced. Offered also is a schematic outline of the overall concept.

48. Silverman, Robert E. "Two Kinds of Technology." Educational Technology. January 15, 1968, p. 3.

As indicated in the title, "Two Kinds of Technology," the author makes a distinction between educational technology emphasizing techniques and/or devices and educational technology which places more emphasis on principles and rationales. The first is referred to as relative technology and is described as noninventive - - as borrowing and applying. The second is referred to as constructive technology and is described as:

1)"the analysis of instructional problems;
2) the selection or construction of measuring instruments needed to evaluate instructional outcomes; and
3) the construction or selection of techniques or devices to produce the desired instructional outcomes."

Reference is made to Teaching Research's Automated Classroom (TRAC) facility as an example of good use of technology. The author concludes that a new discipline requiring people "trained in behavioral science, exposed to teaching and unafraid of devices" would facilitate a "new breed of technologists" to foster the constructive technology.

49. Silvern, Leonard C. "Educational Technology Doesn't Really Exist." Educational Technology, January 15, 1968, pp. 19-20.

The author discusses the reasons for the current disagreement within the educational profession as to what is meant by the expression educational (or instructional) technology with reference to the image of the educational media specialist as a former audiovisualist. A definition of education is offered as follows:

> "It is information processing in which many or most all of the elements are humans; it is the acquisition, identification, analysis, sorting, storage, retrieval, and transmission of information between teachers and learners."

The author concludes that what is still missing in the educational environment is "awareness and knowledge of the system as an information processing network - as a cybernetic model."

50. Stover, Carl F. (ed.) The Technological Order. Wayne State University Press. 1963. 280 pp.

This volume is a partial transcript of the proceedings of the Encyclopaedia Britannica Conference on the Technological Order, March, 1962. The purpose of this conference was "to understand what modern technology is, what it means, and what must be done with it if it is to serve man well."

Papers included in this work are "Technology in the Modern World," Sir Robert Watson-Watt; "The Technological Order," Jacques Ellul; "Technology and Man: A Christian Vision," W. Norris Clarke; "The Laws of Technological Development," A. Zvorkine; "The Act of Invention: Causes, Contexts, Communities, and Consequences," Lynn White, Jr.; "The Changing Technical Act," A. Rupert Hall; "Technology as a System of Exploitation," Scott Buchanan; "The Place of Humanism in a Technological World," Willy Hartner; "Technology in Focus," Ritchie Calder; "Technology in Emerging Countries," Arthur Goldschmidt; "Long-Term Prospects and Problems," Robert Theobald; "Where We Came Out," Ralph W. Tyler.

Commentaries and reports of the discussions are also included. The volume is indexed.

51. Torkelson, Gerald M. "Educational Media." National Education Association, 1968, 33 pp.

This booklet is designed for teachers interested in educational media and the learning process. Its objectives are twofold:

1) "To select from relevant research those suggestions which may have a direct bearing upon the teacher's use of media.
2) To provide the teacher with the perspective about media which not only suggests the scope, depth, and applications of media to teaching, but also focuses upon accelerated applications of media to instruction."

The four main emphases of the book are: (1) Media and the Educational Setting, (2) Understanding Media, (3) Utilizing Media in Teaching and Learning, and (4) Improving the Understanding and Use of Media.

The author concludes: "evidence from research is that machine-dependent systems have provided kinds of learning which are adaptable to non-teacher forms. The future need is for a greater clarification of the teacher's unique contributions and roles."

Included in the text are definitions of "media", "audio-visual", and "instructional technology" as stated by the National Commission on Definition and Terminology. Also included is a list of selected references.

52. Trow, William Clark. Teacher and Technology: New Designs for Learning. Appleton-Century-Crofts. New York, 1963, 198 pp.

This easy-to-read volume deals with the need for and possibilities of grouping all the various media (new and old) into a PATTERN of instruction which will perform a better job than otherwise could be done. It views the instructional media in light of their historical development showing the new technology as the natural outgrowth of the old.

Chapter one is a brief introduction; Chapter two, "The Learner and His Environment", is a review of some of the many things already known about learning. Chapter three, "Environmental Control: Technological Changes", deals with our present technology and Chapter four with the new media. In Chapter five, the implications of the new technology and the systems approach are discussed and Chapter six attempts to give a "realistic picture of the way things might look in operation."

The last chapter is a brief essay on the directions of change in the American school system. A large bibliography is included at the end of the book.

53. Ullmer, Eldon, J. "The Meaning of Instructional Technology: An Operational Analysis." Educational Technology. December 15, 1968, pp. 10-14.

The author offers "an interpretation of the meaning of instructional design, instructional technology, and the systems concept, as viewed from an operational standpoint." Existing views of instructional technology are discussed including those of James Finn, Deterline, Heinich, Ely and Glaser. The author defines instructional technology as, "the systematic body of information and the process and communications' capabilities available to accomplish instructional functions." In order to fully understand the concepts of instructional technology and design, however, the author feels an understanding of the systems concept to be basic. A model is outlined and recommended for identifying requirements for the processes and products of instructional design efforts.

54. Unwin, Derick. "Applying Educational Technology." Educational Technology. January 15, 1968, pp. 12-13.

The author states his purpose in writing this article as three fold:

1) "to define what is meant by the term "Educational Technology";
2) to describe a specific example of educational technology in action; and
3) to forecast some likely developments in educational technology."

The definition of educational technology offered is: "Educational Technology is concerned with the application of modern skills and techniques to the requirements of education and training. This includes the facilitation of learning by manipulation of media and methods, and the control of environment in so far as this reflects on learning."

The article offers, as an example, a system in effect at a British junior school. The conclusion of the article deals briefly with the future of educational technology.

55. Weisgerber, Robert A. ed. Instructional Process and Media Innovation. Rand McNally and Company, Chicago, 1968, 569 pp.

"This book's concern is to provide representative viewpoints pertinent to the education process and its development through new methods. It stresses the scope of change possible in instructional practice through the wise use of media. A consolidation of materials on audiovisual methods facilitates comparison. The treatment of instructional process and media innovation progresses from general to specific."

56. Witt, Paul W. F. ed. Technology and the Curriculum. Teachers College Press, 1968, 146 pp.

This publication contains the papers read at the 1967 curriculum conference of the Teachers College Department of Curriculum and Teaching at Columbia. Contents include: "Cybernation and Its Impact on American Society," Alice Mary Hilton; "Manpower Needs in a Technological Society and Their Implications for Education," Eli Ginzberg; "The Response of the Knowledge Industry to Society's Demand for a More Relevant Education," Robert E. Slaughter; "Educational Technology: The Education of Teachers and the

Development of Instructional Materials Specialists," Paul W. F. Witt; "The Curriculum Field in Retrospect," Herbert M. Kliebard; "Directions for the Development of an Educational Technology," Robert M. W. Travers; "The School as a Model of Society," Joseph C. Grannis; "Educational Technology and the Task of the Curriculum Specialist," Neil P. Atkins; and "Technology and the Human Person," Maxine Greene.

These participants "analyze the vast changes resulting from our advancing technology and suggest what the educator's response should be. A central theme is that the use of technology in education is inevitable and highly desirable provided that the teacher and curriculum specialist play a central role in its design and use as a humanizing factor."

The main ideas of the discussion groups are summarized in statement form at the end of the book.

57. ____________________. "Technology and Curriculum Planning." _Audiovisual Instruction._ Vol. 13(3), March, 1968.

This issue contains a series of articles concerned with the place of instructional technology in the development of a curriculum. It contains the following articles. "What is Instructional Technology?," Robert Heinich; "Technology and the Possible Curriculum," Leslee J. Bishop; "Technology, Learning, and Instruction," Phil C. Lange; "What Individualizing Instruction Means to the Curriculum Director," Hugh F. McKeegan; "Implications of the Individualization of Instruction for Curriculum and Instructional Design," John O. Bolvin; "Individualized Instruction: Changing the Role of the Teacher," Thomas J. Ogston; "A Theoretical Construct for Mediating Instruction in the Social Sciences," Joseph M. Conte and Fenwick English; "Hoban's Heroes Need Help," Frank A. Anderson; "The Media Director and His Job," Robert Gerletti and Phillip Essman; "Technology and Curriculum Planning: Cost-Effectiveness of Instruction," Frederick G. Knirk; "OR and Curriculum Planning," Charles F. Hoban; "Cybernetics and Education K-12," Leonard C. Silvern; "A Multipurpose Projection Stand," John G. Whipple.

SECTION III

Media Personnel: Functions and Competencies

Overview of Section III

This portion of the bibliography includes references to publications dealing with the functions, roles and competencies of personnel who are involved in media-related jobs within the educational system. Consideration has been given to a wide variety of positions, both in the "library" and "audiovisual" areas, and to the inter-relatedness among the jobs currently found in these fields. While many of the publications are descriptive in nature, others are prescriptive in terms of suggesting future roles and functions for media personnel. Still other articles cited include those which may contain implications for the training of media personnel.

58. Atkins, Neil P. "Educational Technology and the Task of the Curriculum Specialist." in *Technology and the Curriculum*, ed. by Paul Witt, Teachers College Press, Columbia University, 1968.

A discussion of "the influence of educational technology on the curriculum specialist's role" the author describes "the efforts of a middle school faculty to find ways to use a dial-access installation to individualize instruction."

59. Belt, Dwayne W. and G. Gardner Snow. "Knapp Project Sponsors Media Conference." *School Libraries*. Summer, 1967, pp. 51-54.

Discusses objectives of the media conference held at Brigham Young University on January 27, 1967. A brief summary of the keynote addresses by Dr. James Brown, Dr. W. Dwayne Belt, and Miss Whitenack is given.

60. Cyr, Helen et. al. *Analysis Classified Employee Positions Within Divisions Concerned with Instructional Materials*. Audio-Visual Education Association of California, 1967, 32 pp.

This booklet is an identification and description of employee positions in instructional material's centers as put forth by the state of California. The contents include the place of instructional materials services and the range for concentrated skill positions, as well as the classified job responsibilities.

61. Eboch, Sidney C. "The AV Specialist: Some Reflections on an Image." *Audiovisual Instruction*., January 1963, pp. 15-17.

This article concerns itself with the need for role definition on the part of the audiovisual specialist; one that enables him to demonstrate the importance of his role in education and to acquire a better public image. The author states the primary function of the audiovisual specialist is "to design and implement information transmission and display systems which are appropriate to specific instructional objectives in well-defined eductional situations." The latter part of the article considers the importance of the development of professional standards.

62. Erickson, Carlton W. H. *Administering Audio-visual Services*. The Macmillan Company, New York, 1959, 477 pp.

This book is in textbook format with the contents intended for graduate students undertaking preparation in the audio-visual field. Included are chapters on: the audio-visual director and his perception of his job; the teaching of audio-visual skills to teachers; acquisitions of materials and equipment; budgeting; facilitating the use of A-V materials; and evaluation.

The chapter on evaluation discusses the nature of the evaluation process and breaks down the evaluation of audio-visual services into five levels of action. At the end of each chapter is contained a group of suggested activities and suggested further readings.

63. Finn, James D. "The Marginal Media Man: Part I: The Great Paradox." Audiovisual Instruction. December 1965, pp. 762-765.

First in a series of articles by this author, both the achievements and retrogressions of the professional media field are explored. Listed as achievements are such events as: the growth and increasing influence of the national conventions; the contributions of the Okoboji conferences, the effect of the influential joint media conferences held with ASCD in 28 states under a Title VII contract; the publication of DAVI's own professional magazine, Audiovisual Instruction; and the successes of the publication program of DAVI. The two main factors listed in the author's case for retrogression are: "The downgrading of the educational media field by the U. S. Office of Education and the complete lack of attention given to educational media at the White House Conference on the professionalism of the media field." The latter is discussed at great length by the author. "It is the thesis of this article that traditional concepts about the professionalization of the educational media field will probably have to be changed, and that the organization of DAVI ought to be changed in order to accommodate the demands of the times on the media man."

64. Freedman, Morris. "Need for Full-Time Audiovisual Specialists in Every School." Audiovisual Instruction. December 1967, pp. 1089-1091.

The article discusses briefly the necessity for full-time audiovisual specialists in every school. Presents broad concepts which provide necessary direction for planning objectives and programs for media service.

65. Gerror, Richard and Richard Allan Margoles, "Emerging Educational Industry--Its Needs for Media Personnel: A Survey." Audiovisual Instruction. February 1967, pp. 143-146.

A study was undertaken to explore the possibilities for professional media persons to work with educational technology in industry. The three areas of information surveyed were: (1) "the present and future needs of media-trained personnel at the doctoral level; (2) the job description for this type of person; and (3) the problem of job-role identity--identifying a media specialist as implementor and disseminator of instructional materials, or as originator and developer of instructional materials."

Ninety-five firms constituted the survey population. A questionnaire mailed to these companies resulted in: (1) of 43 questionnaires returned, 31 were used; and (2) the general finding that if a media specialist is seriously considering work in industry he should have a good theoretical background, a related background in either business or education, and a specialized writing or production skill.

66. Ginzberg, Eli. "Manpower Needs in a Technological Society and Their Implications for Education." in Technology and the Curriculum, ed. Paul Witt, Teachers College Press, 1968, pp. 35-44.

The impact of technology on our society's present-day economic system is presented in this essay with an emphasis on what this means in regards to manpower needs. A large part of the discussion "delineates the educational implications of these needs, particularly with reference to the education of the disadvantaged and the continuing education of adults." Dr. Ginzberg questions the role of curriculum and points out areas where it could be strengthened considerably. He feels that the educational system will be reformed only when more demand is made on the quality of "output" and less regard given to excuses regarding "input."

67. Godfrey, Eleanor. "The Role of the Building Coordinator, Fact and Potential." Audiovisual Instruction. February 1967, pp. 104-109.

Discusses findings of Godfrey's survey of audiovisual coordinators conducted in 1962. Sample included 517 schools from 247 school districts from all parts of the country. Names and major job titles of persons functioning in this capacity were obtained from the principal. Those identified were then asked to fill out a short questionnaire describing the tasks they performed, the time spent in audiovisual duties, and special training they had had, and their opinions about the use of audiovisual materials in their school.

68. Lunn, Mervel S. "What is a Successful Media Director?" Audiovisual Instruction. February 1967, pp. 140-142.

Discusses competencies a media director should display in terms of seven abilities identified by Vance Packard.

69. Martin, Ann M. and C. Walter Stone. A Study of Regional Instructional Media Resources. Phase I - Manpower. University of Pittsburg, Center for Library and Educational Media Studies, Contract OE-3-16-027, Title VII, U. S. Office of Education, 1965.

"This study of instructional media manpower needs combined the techniques of Functional Job Analysis (FJA) and Critical Incident Technique (CIT) to provide (1) some quantitative indicators (FJA) (variables, interest variables and job incentive variables) for grouping media jobs according to areas of performance or capability, interests and satisfactions; and (2) some qualitative dimensions (CIT categories) for classifying educational requirements for the occupational groups derived. A computer-based multivariate statistical analyzer system was adopted for "finding the relevant occupational groups and relevant variables. The multidimensional performance space obtained provides a way of viewing the changes taking place in jobs."

70. Milkman, Robert L. "A Commentary on Professional Placement." Audiovisual Instruction. January 1969, pp. 34-35.

The author, having been engaged in an extensive investigation of entering competencies, professional studies, and placement expectations of master's degree candidates in audiovisual education, provides the reader with information concerning employee resumes in this article. Sources of placement information and questions job candidates should consider before accepting a job are listed. Also explored are the implications of centralized placement.

71. Milkman, Robert L. Entering Audiovisual Competencies, Areas of Graduate Study in Audiovisual Education, and Placement Expectations of Master's Degree Candidates in Audiovisual Education. A Summary Report on the Professional Audiovisual Education Study (PAVE), Office of Planning in Higher Education, State Education Department, Albany, New York, October 1969.

This study was designed to provide information on the professional status of personnel engaged in the educational media field. Information was gathered relative to graduates from the 52 masters degree programs in "media" throughout the country.

Sources included graduates who had been employed for a short time in the field, their employers, a group of recent graduates, a group of would-be graduates and their prospective employers. Areas of inquiry covered by the study include the following:

1) "What audiovisual competencies do candidates exhibit when entering master's degree programs in audiovisual

education?

2) What types of jobs in the media field are available to master's degree candidates?
3) What areas of graduate study in audiovisual education are available to master's degree candidates?
4) What types of jobs in the media field do master's degree candidates expect, and which areas of graduate study in audiovisual education do they consider essential for these jobs?
5) Are the audiovisual competencies of master's degree candidates related to areas of graduate study in audiovisual education which they consider essential?
6) Are the audiovisual competencies of master's degree candidates related to the types of jobs they expect?
7) What types of jobs in the media field are held by master's degree recipients, and which areas of graduate study in audiovisual education do they consider essential for their jobs?
8) What areas of graduate study in audiovisual education do the employers of master's degree recipients consider essential for the jobs held by the degree recipients?
9) What areas of graduate study in audiovisual education do the prospective employers of master's degree candidates consider essential for the jobs available to degree candidates?"

72. Miller, Robert H. "The Media Specialist." Audiovisual Instruction. February 1967, pp. 133-137.

Discusses the Learning Resources Department of the Broward County School System, Florida. Staff roles and positions comprise the bulk of the discussion with a staff chart included.

73. Morris, Barry, ed. "The Function of Media in the Public Schools. Audiovisual Instruction. January 1963, pp. 9-14.

This article is a position paper developed by an audiovisual task force assembled by the NEA Division of Audiovisual Instructional Service in Washington, D. C. on September 6-8, 1962. The necessity for a "technological leap forward" in education is discussed along with the assumptions of which any school system attempting to make this "leap" must be aware. Two functions of media are identified in relation to this: (1) "to supplement the teacher through enhancing his effectiveness in the classroom;" and (2) "to enhance overall productivity through instructional media and systems which do not depend upon the teacher for routine execution of many instructional processes or for clerical-mechanical chores." The media specialist's role is described in relation to these functions by an outline of his activities. Also included in this paper are sections on "Patterns for Organization and Staffing," and "Guidelines to Staffing the Communications Media Services."

74. Noel, Francis W., and Elizabeth S. Noel. Audiovisual Leadership. University of Iowa Audiovisual Center, June 1965, 107 pp.

This publication is the summary of the Lake Okoboji audiovisual leadership conferences between the dates of 1960-1964. The questions explored by this report are as follows:

1)"What does the audiovisual specialist need to know and, as an educational leader, what does he need to do differently heretofore?
2) How does he prepare himself for these additional tasks and responsibilities?
3) What should he know about learning theory and learning principles that should provide basic guidelines for the use of new media and the improved use of traditional devices and materials?
4) What changes in curriculum development and teaching practices are implicit in the use of new instructional materials and devices?
5) What are the implications of new media use for school organization, design and use of learning space?
6) What kinds of research in the use of these media are needed? What responsibilities should the audiovisual specialists have for such research?"

In the second chapter, "Activities, Competencies, and Education of Audiovisual Leaders" a list of seventeen crucial competencies for the communications specialist is presented. Other chapters included are:

III "Learning Theory and Principles"
IV "Curriculum Development, Role of the Teacher and Newer Media, Including Programed Instruction."
V "Implications of Newer Media for Organizational Patterns and Learning Space"
VI "Research Needs Relative to the Use of New Media"
VII "Ten Years of Audiovisual Leadership Conferences"

Included also are two appendices - one listing co-chairman of the conferences and the other persons attending conferences.

75. Norberg, Kenneth, Wesley Meierhenry, Donald P. Ely, Jerrold Kemp and Anna Hyer. "The Role of the Media Professional in Education. Audiovisual Instruction, December 1967, pp. 1026-1029.

A position paper prepared for the Board of Directors of the Department of Audiovisual Instruction National Education Association, the emerging role of the media professional is discussed as well as his contribution to contemporary education, characteristic tasks he is currently performing at various educational levels, and the requirements of his professional preparation. The trend toward the planning of instructional systems on a comprehensive scale is mentioned as being the critical factor in the media professional's role. The most significant and difficult problems confronting the media professional are stated as being "to adapt existing administrative structures, or develop new ones, suited to the optimum functioning of a contemporary technology of instructional communications." A list of five qualifications all media personnel should have is given as well as functions of media professionals in the individual school; the multischool, district, county or regional programs; at the state and federal levels; and in colleges and universities. Recommendations are made based on the lists of professional functions, on what elements of graduate study should be included in professional preparation in addition to the media professional's general education and training.

76. Swartout, Sherwin C. "Professional or Paraprofessional?" Audiovisual Instruction. February 1967, pp. 126-131.

Discussion centers around definition of "paraprofessional" —needs and qualifications of. Author suggests the differences between the professional and paraprofessional as being: (1) the differences in range and depth of media competencies gained through experience; (2) the amount of formal education received; and (3) the qualification to teach. A chart is included demonstrating the possible organization of professional and paraprofessional services.

77. Witt, Paul W. F. "Educational Technology: The Education of Teachers and the Development of Instructional Materials Specialists." in Technology and the Curriculum, ed. Paul Witt, Teachers College Press, 1968, 53-67.

"The central and strategic role of teachers, curriculum specialists, and professors of education in the advancement of educational technology, and the necessity of preparing teachers to use the new technology are themes discussed by Paul W. F. Witt. He stresses the importance of the contributions instructional materials specialists can make in developing media resources and in educating teachers to use them. Noting the shortage of media specialists, Professor Witt urges his fellow educators in curriculum and teacher education to help clarify the role of media specialists and to lend their support to the development of more effective recruitment of promising young people to work in this area."

78. Wyman, Raymond V. "An Interdisciplinary Approach to Planning a Program of Professional Preparation for Media Specialists." Audiovisual Instruction. February 1967, pp. 110-113.

This article contains a brief history of audiovisual education at the college level. The author discusses graduate programs for media specialists emphasizing an interdisciplinary approach. The results of a questionnaire sent to people in the field is discussed. It was found that media specialists are in fairly close agreement regarding the essential content of a graduate program for professional preparation.

79. ________________. "Studying the Education of the AV Man: The PEMS Commission." Audiovisual Instruction. February 1967, pp. 160-161.

Contains information on the forming of the PEMS Commission, its major committees, goals, and a summary of work completed.

80. ________________. Educational Communications Handbook. The University of the State of New York, Division of Educational Communications, Albany, New York, 1968, 247 pp.

"This handbook is designed to help a superintendent of schools or a director of educational communications to originate and plan a program. It attempts to bring together in an organized manner information concerning the staff, the school facilities, and the educational equipment and materials necessary to use technology in the instructional program. It also includes information on sources of materials and how these materials are handled for distribution to teachers and students."

Chapter IV, "Educational Communications Personnel", describes the emerging role of the media person in education and lists qualifications, functions and preparation required.

SECTION IV

Training of Media Personnel

Overview of Section IV

Section IV is comprised of bibliographic references for selected publications which deal with the professional education and training of media personnel. Roughly thirty articles have been annotated, including research reports on manpower studies, articles pertaining to the systems and task analysis bases for training, and several papers which discuss the relationships between training and education. Of particular interest is the publication by Drs. Cogan and Lancour, The Professional Education of Media Service Personnel. The volume consists of a series of five papers written by leaders in the field of communications which review the major career paths in the educational media field in terms of specific curricular needs.

81. Allen, Dr. William H. "Educational Programs for the Media Profession: Audiovisual Specialist," in Drs. Morris L. Cogan and Harold Lancour, The Professional Education of Media Service Personnel, Graduate Library School, University of Pittsburgh, 1964, pp. 37-45.

Dr. Allen begins his paper on the designing of an educational program for the preparation of audiovisual media specialists, with a listing of the several assumptions "which must be made as baselines for the development of the program." These are: 1) "Programs will be designed for both operational technologists and theoretical policy-makers; 2) the 'technologists' will function primarily as administrators or managers of media programs. The 'policy-makers' will function primarily at the higher educational levels as teacher educators, researchers, and policy-makers; 3) the 5th year program will concentrate on the training of 'technologists,' the 6th and 7th year programs on the education of 'policy-makers'; and 4) some educational experiences are common to both groups of media generalists." Also included in this paper are: 1) categories of job roles for media specialists; 2) minimum competencies to be acquired by audiovisual specialists; and 3) minimum competencies for other specialists.

82. Barson, John. 1967. Instructional systems development - a demonstration and evaluation project. OE 3-16-025, Report No. BR-5-1411, June 1, 1967.

A model for media innovation and instructional development; "media, evaluative, and instructional specialist capabilities were teamed to the decision processes of the instructors and brought to bear on instructional problems under the guidance of the model's preconceived, sequential system of decision-making." A decision steps flowchart proved to be practical in analyzing and improving the teaching approach, but "due to different styles in decision-making and to trouble in initially specifying objectives for the courses, the flowchart was used in a variety of different ways and several of the project teams modified it to fit their needs."

83. Briggs, L. J. Sequencing of Instruction in Relation to Hierarachies of Competence. Pittsburgh: American Institutes for Research, 1968.

This report deals with the problem of sequencing of instructional material. It reviews the research literature regarding sequencing in terms of the rationale behind the experimentation, the procedures employed, the results obtained, and the apparent implications of those results.

84. Case, Robert N. "School Library Manpower Project Enters First Year." Audiovisual Instruction, January 1969, pp. 42-43.

Recipient of a $1,163,718 grant from the Knapp Foundation, the School Library Manpower Project under the direction of Bob Case has as its goals the identification and definition of the levels of responsibility and kinds of tasks performed in school libraries. Phase I is concerned with the task analysis of school library positions which will be conducted by the Research Division of the National Education Association on a national basis. Outstanding school library programs - - evaluated by a "Criteria of Excellence" instrument established by the Project - - comprise the sample. This phase is due to be completed in October of 1969. Upon completion a list of tasks that should be performed in school libraries will be compiled and a selected group of library educators and school librarians will analyze each task to determine background, skills, aptitudes and knowledge necessary to perform them for the new roles. The two results expected from the preceeding are: (1) new job descriptions built on more effective combinations of tasks and responsibilities; and (2) calls for the re-ordering of education and training to prepare for the newly defined roles. At this time a series of invitational conferences will be held in five geographical regions of the U. S. to seek reaction to the job definitions and levels of study and to examine "the implications of the study for certifying personnel."

Phase II will include the development of guidelines for an education program for school librarians based on responsibilities defined in Phase I, and six experimental education programs will be set up. All institutions offering at least 12 semester hours of education for school librarianship will be invited to attend the planning sessions and assume responsibility for assisting in setting up the programs they may eventually carry out. Also discussed is a plan for setting up a recruitment and scholarship program for attracting potential school librarians into the experimental education programs.

85. Case, Robert N. "Criteria of Excellence Checklist." School Libraries. Winter, 1969, pp. 69-72.

An instrument for evaluating school library programs is described in this article. Being used (and devised by) the School Library Manpower Project, this criteria checklist emphasizes "the performance of service activities related to total staff function." The value of and scoring for the checklist is also discussed as well as its use for the Manpower Project.

86. Cogan, Dr. Morris L. and Dr. Harold Lancour. *The Professional Education of Media Service Personnel*. Graduate Library School, University of Pittsburgh, 1964, pp. V-115.

This publication consists of a series of five papers written by leaders in the field of communications which review the "major career paths in the educational media field in terms of specific curricular needs. It states degrees of difference which exist currently as well as the commonality of learning requirements represented among the various areas of professional interest in educational communication. Finally, it proposes a new rationale which in the future may very well guide major developments in the field."

The five articles are: (1) "Programs For The Preparation of Media Specialists," by Dr. Wesley C. Meierhenry; (2) "Educational Programs For The Media Profession," by William H. Allen; (3) "School Librarianship," by Dr. Leslie H. Janke; (4) "Broadcasting," by Dr. Armand L. Hunter; and (5) "Instructional Technology: Programed Instruction and Computer Guided Learning," by Dr. Wendell I. Smith.

Included is a selective bibliography.

87. Erickson, Carlton W. *Administering Instructional Media Programs*. New York: The Macmillan Company, 1968. 660 pp.

This is a broad comprehensive textbook dealing with problems in the administration of instructional media programs. The volume includes guidelines, principles, excerpts from pertinent documents, case studies, examples of programs, extensive bibliographies, and many evaluative checklists.

88. Fitts, Paul M. "Factors in Complex Skill Training." *Training Research and Education*. Robert Glaser, ed., John Wiley and Sons, 1965. pp. 177-198.

This chapter considers "skilled performance in a general sense which includes motor skills. The concern of present-day training researchers in the specification of the behavior that is the object of instruction is again emphasized here, and a preliminary taxonomical scheme for skilled performance is presented. General categories for describing skilled activity are discussed in detail and include the degree of gross body movement involved, the extent of external pacing, the stimulus-response relationships, the characteristics of the feedback information, the physical equipment aspects of the situation, and the overall complexity of the activity involved. In addition to laboratory studies, an account is given of the utility performance. Differences between proficiency development in real-life tasks are compared with laboratory tasks. On the basis of research findings, probable phases in the learning of skills are hypothesized and the implication for training considered."

89. Frederiksen, Norman. "Proficiency Tests for Training Evaluation." in Training Research and Education. Robert Glaser, ed., John Wiley and Sons, 1965. pp. 323-346.

This easy to read essay mentions briefly the increasing need for improved methods of training evaluation due largely to the many educational innovations that are being introduced. In order to evaluate a training program, the author stresses the importance of having a clear idea of the desired outcomes in terms of observable behavior.

Seven methods of training evaluation are discussed emphasizing advantages and disadvantages of each. These methods are: (1) Solicit Opinions; (2) Administer Attitude Scales; (3) Measure Knowledge; (4) Elicit Related Behavior; (5) Elicit "what would I do" Behavior; (6) Elicit Lifelike Behavior; and (7) Observe Real-Life Behavior. Although the observation of real-life behavior is closest to the ultimate objectives of instruction, it is difficult to manage as a technique due to the lack of control over the test situation. The author recommends the eliciting of lifelike behavior for first consideration.

The remainder of the article presents tests which elicit lifelike behavior by the staff of the Education Testing Service. Discussed are: (1) The Medical History Test, (2) The In-Basket Test for principals, (3) The Russel Sage Social Relations Test for elementary school children and, (4) The Physical Science Study Committee Physics Test.

A list of twenty-three references is included.

90. Fromer, Robert. "A Basic Difference Between Educational and Training Systems." Educational Technology, April, 1969, pp. 51-52.

Author contends that the most significant aspect in the current world of education and training is the "systems approach." Elements of a basic systems model are listed as: problem definition; statement of objectives; selection of methods and techniques for achieving the stated objectives, identification of appropriate content; design and development of a system of personnel, hardware and software to implement the methods, techniques and content designed to achieve the selected objectives; design and development of measurement instruments to evaluate and diagnose the system's effectiveness, and a feedback control system to optimize system effectiveness. Although the author recognizes the "above elements are the same for either the design of educational systems or training systems" he distinguishes between two classes of objectives which define training and education as heterogenous. Referred to as "Class I" and "Class II" objectives, the first are task-specific and the second are behavioral descriptions of the knowledges and skills required to perform the tasks included in Class I objectives.

The final point of the article relates the two classes of objectives to educational and training systems. The purpose of a training system, according to the author, "is to produce individuals capable of performing the tasks required to accomplish a specific job or set of jobs." The main purpose of an educational system is stated as "to prepare individuals for a large variety of possible jobs, some of which may not yet exist."

The author concludes: "the problem of achieving the goals of an educational system is much more difficult. There are no specific job-related tasks that can be identified for an educational system. The problem, then, is to identify an optimum set of knowledges and skills that will best prepare students for a very large variety of job possibilities."

91. Glaser, Robert. "Psychology and Instructional Technology." in Training Research and Education. Robert Glaser, Ed., John Wiley and Sons, 1965, 1-30.

This introductory chapter considers: "the distinction between training and education, components of the instructional process, and the plan and content of the book."

The two distinctions generally made with regard to the common usage of the two words "training" and "education" are listed as: (a) "the specificity of the behavioral end-products", and (b) "minimizing vs. maximizing individual differences." The author's resolution of the distinction is to recognize that they are "two aspects of the teaching process. . . . .not mutually exclusive."

A brief summary of each article included in this book is given as well as a list of twenty-three references.

92. Glaser, Robert (ed.) Training Research and Education. John Wiley and Sons, Inc., 1965, 596 pp.

The author-editor of this book states the objectives of the volume as the presentation of a "representative account of the training research that has been carried out and to examine its implications for psychological research and for training and education." The book consists of a collection of articles summarizing the major research findings and experiences of a number of leading men in the field. Articles and authors included are:

1. "Psychology and Instructional Technology," Robert Glaser

2. "Analysis and Specification of Behavior for Training," Robert B. Miller
3. "The Design of Correlational Studies in Training," Philip H. Du Bois
4. "The Prediction of Success in Intensive Foreign Language Training," John B. Carroll
5. "The Description and Prediction of Perceptual-Motor Skill Learning," Edwin A. Fleishmann
6. "Factors in Complex Skill Training," Paul M. Fitts
7. "Skilled Performance and Conditions of Stress," James Duse
8. "Simulators," Robert M. Gagne
9. "Experimental Research on Instructional Devices and Materials," Arthur A. Lumsdaine
10. "The Training of Electronics Maintenance Technicians," Glenn L. Bryan
11. "Proficiency Tests for Training Evaluation," Norman Frederiksen
12. "On-the-Job and Operational Criteria," Clark L. Wilson
13. "Experimental Study of Team Training and Functioning," Murray Glanzer
14. "Exercising the Executive Decision-Making Function in Large Systems," Launor F. Carter

93. Harcleroad, Fred F. ed. "The Education of the AV Communication Specialist." AV Communication Review, September - October 1960, Vol 8, no. 5, 7-17.

The Seminar on the Education of the AV Communication Specialist reported in this volume took place March 2-4, 1960, during the annual convention of the Department of Audiovisual Instruction in Cincinnati. This seminar was designed to discuss issues, present various points of view, and to examine existing educational patterns. Contents of this volume include the following papers: Section I "The Education of the AV Communication Specialist," Fred F. Harcleroad; Section II "Present Patterns of Education and Research"; "The Communications School: Neophyte in Higher Education," Donald P. Ely; "Schools of Education: A Pattern Barely Visible," L. C. Larson; Section III "Contributions from the Field Within Education and Social Science"; "Our Debt to Educational Philosophy," A. W. Vander Meer, "Let's Put the Human Element Back In," George Gerbner; Section IV "The Role of the Colleges of Education and Communication"; "A Cross-Disciplinary Approach to Communications Study;" Gordon A. Sabine, "Trends in Teacher Education: Their Implications for AV," Walter K. Beggs; Section V "Influence of New Technological Developments"; "Electronics and the Changing Role of Print," Marshall McLuhan; "A New Theory for Instructional Technology," James D. Finn; Section VI "Retrospect and Prospect," Fred F. Harcleroad.

94. Hooper, Richard. 1969. A Diagnosis of Failure. A.V. Communication Review 17(3): 245-264.

This article discusses some of the causes of the failure of the new technologies to become widespread in their classroom use. Some of the underlying causes investigated are: the resistance to change within the educational system itself, the feeling that technology is a threat, new terminology, unqualified people, obsession with gadgetry, accessability of the materials, and localism of power in the educational system.

95. Jackson, Philip W. 1968. The Teacher and the Machine. Pittsburgh, Pa.: The University of Pittsburgh Press. 90 pp. (Horace Mann Lecture, 1967)

The author's argument is contained in three parts: first, "that changes in the teacher's work resulting from the growth of educational technology will not be dramatic, and will not occur as rapidly, as many of the headline-making predictions would have us believe; second, that several of the educational benefits alleged to accompany technological change will either fail to materialize or, at best, will prove to be mixed blessings; third, that although the expanded use of machines in the classroom poses some unique problems for educators, a more fundamental question concerns the extent to which a mechanistic ideology should be allowed to permeate our view of the educational process."

96. Larson, L. C. "Developing a Graduate Program to Train Instructional Design and Media Specialists." Audiovisual Instruction. January, 1969, pp. 20-24.

Commencing with a brief introduction to the development of Indiana University's graduate courses in audiovisual education, the author discusses the current progress of the two-year re-evaluation of the university's programs and courses in audiovisual education. The need for re-evaluation was seen as a result of: "the increasing sophistication and complexity of technological development in education; the needed increase in knowledge and skills for handling technology in education; the emergence of powerful combines of electronic and publishing giants; the new roles for teachers with the application of educational technology in instructional planning; and the changes being effected by federal support of education." Committee reports mentioned include those on: "describing career opportunities; specifying in behavioral terms the competencies desired; developing criteria for the admission of students; and later placement in positions of responsibility." Other committee reports mentioned were those that dealt with "the activities and future personnel needs of the publishing - electronic combinations; military, government, business, industry and adult organizations; and the application of the systems approach to instructional design, development and deployment of media." Areas of professional education emphasis are listed as well as areas of research and development interests. The recommendations and conclusions of the various committees and task forces are integrated in the remaining half of the article in the discussion on Indiana's graduate levels emphasis and on the content of the tentative student counseling guidelines being formulated.

97. Lange, Phil C. 1968. The Principal and the Information Explosion. The National Elementary Principal. 47(6): 47-55.

This article centers around the information explosion and the elementary school principal's problems in dealing with the massive amount of knowledge that is available to the pupil. The responsibility of the school for teaching their pupils to "learn will ALL available information in its many mediated forms" is the major concern in this paper. The importance of the principal in seeing that his school is facing these problems is emphasized. Some suggestions as to how the principal can deal with these problems are presented.

98. Morsh, Joseph E. and Raymond E. Christal. "Impact of the Computer on Job Analysis in the United States Air Force." Personnel Research Laboratory, Aerospace Medical Division, Air Force Systems Command, Lackland Air Force Base, Texas, October 1966, pp. 1-16.

This report describes the Air Force method of job analysis. Basic steps of their methodology are as follows:

1. Up-to-date files of all personnel (Air Force) are maintained on magnetic tape for maximum accessibility. A computer is programmed to extract a selection of representative samples and to print name and mailing address labels.
2. A job inventory, consisting of from 200-400 task statements grouped under major functional categories (called duties), is constructed from published source materials in standardized format and mailed to samples of approximately 500 to 2,000 job incumbents.
3. The participants are asked to supply identification and background information and to indicate performance or nonperformance of tasks. Also recorded is: relative time spent on each task and a rating as to difficulty, frequency of performance, and criticality of training emphasis required.

4. The computer generates composit job descriptions made up of tasks performed for any group of persons where the cases can be defined in terms of background variables. Job descriptions can be generated manipulating nine variables.
5. "Those incumbents in a survey sample who perform essentially the same job are grouped together, and a job description composed of duties and tasks is published for each such job type identified."

Also included in the report is an appendices composed of examples and a list of further references.

99. McClelland, William. "The Role of Media in Education and Training." pp. 5-20, in Educational and Training Media: A Symposium, National Academy of Sciences - Nation Research Council, Glen Finch, ed., Publication 789, August 1959.

McClelland stresses the distraction between "education" and "training", stating that the differences are "more of degree than kind." They differ according to McClelland, in terms of: relative emphasis on conceptual materials; perceptual motor performance and on possession of information and knowledge; in terms of breadth of the skill and knowledge to be learned; role of appreciation, understanding, behavioral sets, and general attitudes; predictability of the outcome of tasks or jobs to be performed; and complexity of the task to be performed. McClelland states that "specialization is the hallmark of training". Education is much broader, designed to "prepare for complete living" (Herbert Spencer). "Training is conceived of as a process by which the learner acquires behavioral sets for the performance of a highly specified job or set of tasks." McClelland presents a "psychological rationale for training"; training, according to this author, may: (1) teach skills and knowledge not already in the learner's repertoire; (2) improve performance effectiveness in tasks already mastered but at a lower level of proficiency; and (3) produce new combinations of knowledges and skills which have already been mastered.

The major topics of concern in this paper are summarized as follows:

1. "There are many differences between education and training. They are differences in degree, rather than in kind. The most critical one for psychologists doing training research is the degree to which the objectives of learning can be specified in concrete, behavioral terms.

2. Both education and training are necessary in order to provide the skills, knowledge, concepts, attitudes, or behavioral terms.

3. There are four critical aspects to the education and training processes; determination of what to teach, what methods and techniques to use in teaching it, what media most effectively and efficiently support the methods chosen,

and how effective the instruction is. The order in which the four are considered is of great importance in the applications of the technology of training.

4. Education and training media are viewed as vehicles for instruction. Their role is to facilitate the acquisition of those behaviors which must be mastered for effective performance."

100. McMahan, Marie. "Okoboji Interview." Audiovisual Instruction, December 1965, pp. 796-798.

Offering a brief outline of the activities of the Eleventh Lake Okoboji Audiovisual Leadership Conference, the author concentrates on the recommendations made by the committee on professional training. Content recommended for the training of media professionals is listed as being:

1. "Media application to other professional education courses, e.g., child growth and development, educational psychology, and learning theory;
2. Learning theory applied in practical teaching procedures utilizing media techniques;
3. Communication theory and communication;
4. Selection and evaluation of materials;
5. Technical operation of media equipment;
6. Production of materials for teaching;
7. Utilization of materials in teaching situations; and
8. Evaluation of the materials and of their relative effectiveness as aids to learning."

The committee on Educational Media Leadership further listed "types of media leaders who are needed and gave attention to programs that would nurture emerging leaders." Suggestions included: training workshops; local, state and regional Okoboji conferences; Title XI institute experiences; dissemination of professional information; participation in state associations; and recognition for media use and media leadership.

101. Meierhenry, Wesley C. 1967. Teacher Competencies Project. Audiovisual Instruction. 12(10): 1030-1031.

This short paper lists three competencies which should be incorporated into teacher training programs in order to train teachers to handle the new uses or adaptations of processes involved in the teacher-learning act. These three are: theory, programming, and production of materials and skills in equipment operation.

102. Meierhenry, Dr. Wesley C. "Programs For The Preparation Of Media Specialists." in Drs. Morris L. Cogan and Harold Lancour, The Professional Education of Media Service Personnel, Graduate Library School, University of Pittsburgh, 1964, pp. 1-33.

The development of new programs for the 5th, 6th and 7th years of preparation for media specialists is discussed within the framework of new functions to be served by media specialists. Those media functions identified include: information and understanding; application skills; manipulative skills, operational abilities and appropriate judgements and skills. Entering competencies, common cores of competencies and specific competencies are discussed and charted in reference to specialists.

103. Miller, Robert B. "Analysis and Specification of Behavior for Training." in Training Research and Education. Robert Glaser, ed., John Wiley and Sons, 1965. pp. 31-62.

Written in the terminology of training research this article gives a brief history of task analysis procedures (carefully defining all terms on first appearance) and a comprehensive coverage of the procedure per se. A great amount of the information included in this article is concerned with task analysis and training decisions. The author states:

"A moment's reflection should show that task analysis is useful as a means of aiding the training designer, and that the structure and terms used in communicating the analysis are most useful when they are compatible with whatever mode of conceptualization and decision is (or should be) used in training design."

"The perception and description of job requirements in behavioral terms has not been necessary in every training philosophy. This point should be underscored. There is a belief and practice widely extant that formal training teaches a man 'about' his job, and that he can learn his job only while serving on the job; formal training 'helps him learn his job.' In this case, training is equated with education. On the other hand, the philosophy that seeks to maximize the acquisition of actual on-the-job skills and knowledges in formal training demands behavioral information about the job to be taught. This latter philosophy is gaining wider acceptance, especially where cost of training in time, dollars and operational expediency shape policy towards efficiency." It is towards this "latter philosophy" that the basic orientation of this article is directed.

Major classes of training decisions are listed so that specificity of the nature of the information needed from the task analyses is apparent. These are:

(1) What are the criterion performance requirements?
(2) What sources of stimuli and what response controls to represent?
(3) What stimuli to sample?
(4) On what behaviors should there be concentrated effort?
(5) By what means to encode capability in the student?
(6) What training media to use, and how?
(7) How to sequence training?

In addition to many examples of the procedures discussed, the author includes a list of twelve references.

104. Parker, Don H. "They Have the Software and We Have the Hardware." Educational Technology. September 30, 1967, pp. 1-8.

This article centers around the differentiation between training and education and how "the New Establishment" can maximize its contribution to schooling. The author views schooling as consisting of two distinct teaching and learning activities: training and education. Training is defined as skill-getting and education is described as skill-using. The author further expounds, "The learning processes in training are different from those in education. One is rigorous, controlled; the other is creative. The teaching processes must therefore be different."

105. West, Clinton L. "A New Partnership is Needed!" School Libraries. Winter, 1969, pp. 31-32.

Discusses the need for a new training program designed to train the media specialist of the future. It is suggested that trainers of school administrators, curriculum workers, teachers, library and audiovisual specialists should be among those who design and teach in a program for training the media specialist.

106. Wilson, Clark L., et. al. "On-the-Job and Operational Criteria." in Training Research and Education. Robert Glaser, ed., John Wiley and Sons, 1965. pp. 347-378.

This article emphasizes the lack of on-the-job performance measurements in training research as compared with end-of-course or classroom measurements. The purpose of on-the-job performance measurements is conceived as being an effective way to feed information back to the person responsible for an incumbent's training. In addition to the basic measurement requirements -- reliability and validity -- three requirements derived from learning theory are listed. They are:

1) "The measures must be quite specific. In order to be effective they must identify specific aspects or

elements of the job so that both trainer and trainee may take action to improve performance by improving these elements.

2) For maximum utility the measures must be available to trainer and trainee soon after the test performance.

3) Performance should be measured often, for by doing so the amount of reinforcement provided is increased."

The main portion of this article concerns itself with number #1 above.

Specific measures discussed in terms of usefulness and limitations include: (1) Operational Performance Measures, i.e., tangible product measures, measures of specific behavior elements, gross performance measures, inferred performance and malperformance; (2) Work Samples, i.e., measures based on tasks, job segments or portions of the work load that make up a job; and Ratings, i.e., "cumulative impressions evaluations made by an observer and recorded at a time later than the observation."

A list of twenty-four references is included.

107. ________________. Teacher Education and Media -- 1964. American Association of Colleges for Teacher Education, Washington, D. C., 1964.

This document "is essentially a selective bibliography developed from a search of the professional and popular literature considered pertinent to teacher education faculty and staff concerned with new media utilization in the improvement of teacher preparation instructional programs. This report lists articles, books and research reports as well as information on the procurement of these materials. Basic texts and general references in the area of audiovisual education have also been included for those not already knowledgeable in the field of instructional technology. Included also is information about the educational organizations and agencies and their publications devoted primarily to reporting and evaluating the promising in new instructional media techniques and utilization. Finally, a section has been included listing those references the TEAM Project staff has found pertinent to current teacher preparation curriculum revision."

SECTION V

Future Directions in Media and Instructional Technology

Overview of Section V

Three main levels of concern for the "Future Directions" of media are represented in the following section of this document. Articles, reports and journals reviewed include those that deal with: 1) the future of specific media, i.e., videotape, computers, etc.; 2) the future of technology in the school curriculum; and 3) the future of new methods, techniques, and education, per se. Included, also, are a few selected articles dealing with the new careers and job roles of the future.

108. Asheim, Lester. "A Survey of Informed Opinion on Television's Future Place in Education." in Educational Television, The Next Ten Years. U. S. Office of Education, OE-34036, Title VII, Part B, 1964, 375 pp.

"The question with which this report is concerned is: what role will television be playing in education ten years from now?" The answers to this question are derived from interviews with a panel of experts and are synthesized into some general statements regarding the future. Both pro and con arguments are explored and ten year (1971) predictions are made. The conclusion reached is: "Educational Television is an instrument of great potential value in improving the quality of education in all subject matters and at all levels - if it will be used creatively and imaginatively."

109. Baskin, Samuel. "Finding the 'Mix' - - An Overview of Recent Developments in Higher Education." in Technology - - Education, ed. Donald P. Ely, Syracuse University Press, 1966, pp. 47-77.

Examining the domain of higher education, Dr. Samuel Baskin poses the question of how one can best combine the elements of students, time, technology, facilities and resources to bring about "active involvement of college students in the process of learning." Listed are several recent innovations for use in education which the author feels merit special attention. These include: the development of moderately priced videotape recorders; developments in the use of computer technology for teaching and learning; the development of cartridge-loading 8mm 'magazine' films and automatic projectors; and developments in building an architectural design.

110. Bishop, Leslie J. "Technology and the Possible Curriculum." Audiovisual Instruction. March 1968, pp. 223-226.

The author contends that technology can be the impetus for the restructuring and implementing of a new curriculum, explores the realities involved, and presents a theoretical glimpse into the possibilities of the future. A new structure for viewing the growth and progress of learners is given in embryonic stage as follows:

> "Communicating: Input behaviors such as listening, reading, studying, observing; output behaviors such as speaking, writing, recording, participating, performing; projection of self, understanding of others.
> Creating: Generating, reorganizing, extending ideas; intellectual exploration; production of new product

configurations.
Problem Solving: Researching and applying organized methodology, logical procedure toward application or resolution; developing hypotheses and likely consequences; organized use of funded data for given end.
Manipulating: Use of body in dance or skill; handling equipment in laboratory and shop; learning manipulative skills in typewriting, keypunch; art as skill in tool utilization.
Valuing: Organizing and clarifying feelings; commitment to behavior as in citizenship; the many aspects of appreciation, loyalties, role of feeling in learning, the affective domain explored.
Generalizing: Managing quantities of data by developing general categories; higher levels of abstraction, perceiving clusters of significance, generating new configurations, formulating.
Computing: Logical, systematic knowing use of numbers and symbols; using numerical and quantitative measures; skill in mathematics.
Analyzing: Perceiving relationship to larger context, perspective and synthesis, seeking meaningful relationships, in references and conclusions regarding consequences, order."

111. Borko, Harold and Don D. Bushnell. "Information Retrieval Systems and Education." in The Automation of School Information Systems, ed. by Don D. Bushnell, Monograph I, Department of Audiovisual Instruction, 1964, pp. 53-59.

Extrapolating from present trends in information retrieval, the authors describe possible characteristics of advanced educational systems in the 1970's. Mentioned are: the linking of future universities and secondary schools to regional information centers by data transmission lines; analyzing and coding by machine readers ["card catalogues will be a thing of the past"]; and dynamic information retrieval systems for educational management. A list of twenty-two references is included.

112. Bright, Louis R. "The Place of Technology in Educational Change." Audiovisual Instruction. April 1967, pp. 349-352.

The author conceptualizes the look of education in the future, the affects of educational technology on the school of the future, and hypothesizes the role of tomorrow's teacher in relation to these changes.

113. Bundy, Robert F. "Computer-Assisted Instruction: Now and For the Future." Audiovisual Instruction. April 1967, pp. 344-348.

Implications of increasing computer instructional systems are discussed with particular reference to the computer as a learning laboratory. The changes the computer will bring about in terms of its use as an instructional tool and research tool are discussed.

114. Case, James M., Benjamin C. Sillis, John H. Fischer, Martin Mayer, and Theodore Brameld, "Changes in American Education in the Next Decade: Some Predictions." in Innovation in Education, ed. by Mathew B. Miles., 1969, Teachers College, 690 pp.

This volume is a series of papers presented at a faculty seminar at the Horace Mann-Lincoln Institute. It includes: Educational innovation: the nature of the problem, Matthew B. Miles; Small-scale administrative change: resistance to the introduction of a high school guidance program, M.S. Atwood; Collaboration in teaching and learning: an experimental course for engineering students, Jan E. Clee and James B. Reswick; Utopia and rebellion: the New College experiment, Goodwin Watson; The colleges and the "Arkansas Purchase" controversy, Richard Colvard; Title III and the dynamics of educational change in California schools, Donald W. Johnson; The Illinois School Problems Commision: an innovation in decision-making at the state level, Donald C. Flesche, Nicholas A. Master, and Thomas H. Eliot; 8mm motion pictures in education: incipient innovation, Louis Forsdale; Programed instruction in the schools: innovation and the innovator, Lassar G. Gotkin and Leo S. Goldstein; Well-springs of strategy: considerations affecting innovations by the PSSC, Paul E. Marsh; The innovation of classroom mental health practices, Robert S. Fox and Ronald Lippitt; Resistance to the adoption of audio-visual aids by elementary school teachers: contrasts and similarities to agricultural innovation, Gerhard Eichholz and Everett M. Rogers; Studies in educational innovation from the Institute of Administrative Research: an overview, Paul R. Mort; School superintendents and the adoption of modern math: a social structure profile, Richard O. Carlson; Evaluating an experimental program in medical education, Patricia Kendall; Research and practice in the teaching of reading: a progress report, Allen H. Barton and David E. Wilder; Curricular change: participants, power, and processes, Gordon N. Mackenqie; On temporary systems, Matthew B. Miles; State organization for educational change: a case study and a proposal, Henry M. Brickell; Foundation support of educational innovation by learned societies, councils, and institutes, Joseph C. Kiger; Mass media, mass mind, and makeshift: comments on educational innovation and the public weal, Frank G. Jennings; Structural features of American education as basic factors in innovation, Sloan R. Wayland; Changes in American education in the next decade: some predictions, James M. Cass, Benjamin C. Willis, John H. Fischer, Martin Mayer, and Theodore Brameld; Innovation education: some generalizations, Matthew B. Miles.

115. Coulson, John E. "Technology and Educational Planning." Educational Technology. February 28, 1968, pp. 3-7.

Discusses the impact of technological developments in every aspect of school operations. Stresses need for increasing coordination between districts, and county and state departments of education in selecting out of the myriads of new technological developments those that will best meet priority objectives. The author strongly feels that technology will eventually change the entire pattern of education, but the ability of the districts to cooperate and the quality of governmental leadership and coordination will determine whether the change is an efficient one or not.

116. Coulson, John E. "Introduction: Computer-Based Instructional Systems." in The Automation of School Information Systems ed. by Don D. Bushnell, Monograph I, Department of Audiovisual Instruction, 1964, pp. 93-95.

A brief discussion on the use of computers for instruction, the author points out costs involved as still being a major hindrance to adoption along with the many methodological questions as yet unanswered. The conclusion reached is that "more study is needed on the practical and theoretical implications of programmed instruction and of computer-based instructional systems before the future role of such systems can be accurately predicted. Whether or not the computer is ever used widely for instruction in the schools, it will undoubtedly provide an extremely useful tool for educational and training research."

117. Faris, Gene. "Would You Believe an Instructional Developer?" Audiovisual Instruction, November 1968, pp. 971-973.

This article discusses, with reference to statements by R. Louis Bright and John W. Gustad, the future need for skills in the area of development. Development, the author explains, is different from research in that "it is not a search for knowledge" but "rather it is devising a solution to the problem." Presented is a model used in structuring an institute focusing on the improvement of undergraduate instruction with "instructional developers" guiding the activities of teams of faculty members. Both students and faculty involved answered the question, "should the media field include a specialist in instructional development?" with strong favor at the termination of this institute.

Included in the article is a job description of an Instructional Developer. Also included is a table analyzing the "Competencies and Areas of Study for an Instructional Developer."

118. Fine, Sidney A. "Guidelines for the Design of New Careers." W. E. Upjohn Institute for Employment Research, September 1967, 1-23.

The author states in summary: "the design of new careers involves technical and strategic considerations, but above all, employer and community commitment. It is commitment on the part of employers that transforms dead-end jobs into opportunities for growth. This is fundamental. Once commitment is established, then technical and strategic guidelines become relevant." Technical and strategic guidelines are specified. Discussion includes five assumptions generally made concerning differentiation between professionals and paraprofessionals. An appendix offers a schematic representation of the author's classification scheme for worker functions.

119. Finn, James D. "A Look at the Future of AV Communication." AV Communication Review, 3: 244-56; Fall 1955.

A short article discussing the possible positions of AV communications in the future. It also discusses the responsibilities of the people in control of the directions and roll it takes in the future.

120. Gehret, Kenneth, G. "Today's Experiments: Tomorrow's Schools?" The Christian Science Monitor, February 15, 1969, Second Section.

This article discusses individualized instruction and its fundamental role in the school of the future.

121. Goldberg, Albert L. and Robert J. Cymbala. "EDP in Education." Audiovisual Instruction. April 1967, pp. 349-352.

Discusses the complexity of the present situation regarding computers in the schools. Offers some selected approaches to computers in education that have been used successfully by various educational institutions.

122. Goodlad, John I. "The Future of Learning and Teaching." AV Communication Review, Vol. 16, 1, Spring 1968, pp. 5-15.

Discussion centers around the use of the computer in education and the process of humanizing instruction. The author submits that "the computer can and will do certain instructional tasks better than any human teacher can perform them," and urges that man's traditional role in regards to the computer be critically examined. As to the future of education the author states, "we are still in a traditional era of human-based instruction. Most of the innovations needed to refine human-based instruction. . . . are now with us. Few additional inventions are likely to appear in the next decade. But we have quite enough to occupy us well into the 1980's." A question posed at the conclusion of the article is one the author feels may possibly become one of the most controversial issues of the twenty-first century: "What kinds of human beings do we want to produce?"

123. Greenhill, Leslie P. "VTR Teaching on the Small Campus; Sharing Instructional Resources." Educational Television. May 1969, pp. 20-21, 24, 28.

Discusses the use of video-taped instruction to complement local course offerings at two-year campuses. A cost analysis conducted to compare video-taped instruction to regular instruction revealed that the cost per student/credit was slightly lower with video-taped instruction. Details of costs of VTR's are discussed along with patterns of use, student reactions and implications for small colleges. The author concludes that "there is no doubt that if students are motivated to learn, they can learn very effectively through the use of video-taped courses which can, at the same time, greatly enrich the offerings of a small college."

124. Halperin, Samuel. "Implementation with Vision." School Libraries. Summer, 1967, pp. 23-27.

The article consists of exerpts from an address made before a joint conference of the Florida Association of School Librarians and the Florida Audiovisual Association in Fort Lauderdale. Discussion is centered around a summary of federally sponsored media programs.

125. Hilton, Alice Mary. "Cybernation and Its Impact on American Society." in Technology and the Curriculum, ed. Paul Witt, Teachers College Press, 1968, pp. 1-33.

The opening dissertation of the 1967 Curriculum Conference of the Teachers College Department of Curriculum and Teaching at Columbia University, Alice Mary Hilton accomplishes a global-historical view of cybernation and its impact on American society. The three major fields in which cybernetics has an enormous impact: the production process; the learning process; and the political process are discussed with the emphasis being on mans' need to recognize the new role he is to play in the future in regards to his independence from production activities. The challenge to educators is set out. Education should help man become independent economically, intellectually, and emotionally so that he can become "Man, The Creator." This paper demonstrates that technology, if properly understood, can be a humanizing element rather than an element of fear or de-humanization.

126. Hirsch, Werner Z. Inventing Education For The Future. San Francisco, California: Chandler Publishing Company, 1967.

This book is a compilation of the papers presented at the Conference on Educational Innovations held in California on December 17-20, 1965. The four major parts of the book present: 1) "an integrated view of innovating education; 2) ways to study the future and their implications for education; 3) innovations to meet the future, ranging from specific computer-assisted programs to new management techniques; and 4) prospects for innovation and change in America." Using the seminar method, the intent of the conference papers was to: "examine the present and future environments in which education is expected to perform; gain an understanding of education's inadequacies; seek possible ways to improve the ability of education to meet its responsibilities; find ways to evaluate innovations in education to obtain a basis for selection; identify and examine the goals of education; and, finally, examine the means of, and barriers against, introducing innovations into the educational system." Nineteen individual papers make up the chapters.

127. Kent, Allen. "Introduction: The Retrieval of Educational Information." in The Automation of School Information Systems, ed. by Don D. Bushnell, Monograph I, Department of Audiovisual Instruction of the NEA, 1964, pp. 51-52.

A brief discussion on the evolution of knowledge, this essay points up the need for educational institutions to cope with the "demands of modern civilization" - - - one of the major tasks being the responsibility for coping with the explosion of recorded knowledge. Rapid change is seen to have brought about: (a) "increasing specialization on the part of the individual; (b) increasing depth of penetration of analysis of knowledge recorded in civilization's memory; and (c) application of more modern tools, such as computers, to scan, correlate, reproduce and deliver information appropriate to given problems." The library, representing man's memory, is shown to no longer have leisure time in which to adjust to evolutionary change.

128. McCusker, Sister Mary Girolama. "Implications of Automation for School Libraries." School Libraries. Fall, 1967, pp. 23-27.

Discusses the problems of library personnel shortages and improving library service in light of the growing technological developments. Suggests that a close examination of the librarian's tasks, etc., would lead to a discovery of how automation could relieve the current burdens of staffing. Many examples given of particular applications of technology to problems.

129. McCusker, Sister Mary Girolama. "Implications of Automation for School Libraries." School Libraries. Fall, 1968, pp. 15-22.

Discusses three different levels of automation currently employed in library situations. Very detailed description of random access system.

130. Moffett, Thomas J. and Jack H. Longbotham. "A Communications Approach to Learning." Audiovisual Instruction. November 1968, pp. 987-990.

Discussed is a project at Texas A & M University called CATE, acronym for Creative Applications of Technology to Education. The CATE project "is testing an application of technology which utilizes an electronic communication system plus overhead projectors, slide projectors and stereophonic tape recorders." The goal is to provide increased learning opportunities in schools of the East Central Texas area, particularly in remote school districts.

131. Molnar, Andrew R. "The Role of Computers in Education." Educational Technology. September 30, 1967, pp. 9-12.

The author points out that "Computer Technology, although but 15 years old, has made an enormous impact on society". Its role in education is still small but "widely diversified." With the purpose of raising issues the author discusses computers in the schools within the following topics: administration; computer-based data banks; tools in various disciplines; CAI; research and research concerns.

132. Morphet, Edgar L. and Charles O. Ryan, eds. Designing Education for the Future. No. 2. Implications for Education of Prospective Changes in Society, Citation Press, New York, 1967.

A report of the second area conference of an Eight-State Project, Designing Education for the Future. Includes the following: Major Implications for Education for Prospective Changes in Society, Paul A. Miller and Laurence D. Haskew, Purposes, Scope and Organization of Education, Ralph Tyler, The Educational Program to 1980 and Beyond, John I. Goodlad, Conditions of Learning, B. Othanel Smith, Early Childhood and Compensatory Education, A. Harry Passow, Education for the World of Work, Gordon I. Swanson, Community Colleges and Other Educational Programs Beyond the Twelfth Grade, Leland L. Medsker, Adult and Continuing Education, Fred Harver Harrington, Colleges and Universities and Their Relationships, Theodore L. Reller and John E. Corbally Jr., Educational Research and Development, David L. Clark, Leadership and Control of Education, Luvern L. Cunningham, Educational Personnel, Claude W. Fawcett, Local Organization and Administration of Education, Henry M. Brickell, and Keith Goldhammer, State Organization and Responsibilities for Education, R. L. Johns and Roalk F. Campbell, Political Competence, Henry Toy Jr. and Harold Taylor, Financial Support of Education, Jerry Miner.

133. Morphet, Edgar L. and Charles O. Ryan, eds. Designing Education for the Future. No. 3. Effecting Needed Changes in Education, Citation Press, New York, 1967.

A report of the third area conference of an Eight-State Project, Designing Education for the Future. Includes the following: Strategic Variables in Planning, Leonard A. Lecht and Robert P. Huefner, Planning for Changes in Education, Kenneth Hansen and J. Clark Davis, Basic Strategies and Procedures in Effecting Change, Robert Chin and Stephen P. Hencley, Effecting Needed Changes in Education, Robert B. Howsam and Donald C. Orlich, Research, Development and Dissemination Strategies in Improving Education, R. Louis Bright, Hendrik D. Gideonse, and Robert L. Baker, Power Structures and Educational Change, Ralph B. Kimbrough and Patrick D. Lynch, Political Problems Involved in Educational Planning, Nicholas A. Masters and Jack M. Campbell, Planning and Effecting Needed Changes in Individual Schools, Don E. Glines and Bernard V. Rezabek, Planning and Effecting Needed Changes in Local School Systems, Roderick F. McPhee, Planning and Effecting Needed Changes in Urban and Metropolitan Areas, Melvin W. Barnes, Benjamin E. Carmichael, Robert H. Johnson, and Bernard Russell, The State Education Agency of the Future, William H. Roe and Warren G. Hill, State Planning for Education, Jack Culbertson and J. Ralph Rackley, Planned Change, Public Education and the State, Virgil Blanke and Ewald B. Nyquist.

134. Nelson, Lester W. "Implications of Research for Curriculum Change." in Newer Educational Media, Pennsylvania State University, 1961, pp. 57-65.

The most important forces affecting change in education are listed as: 1) "the explosion of population; 2) the explosion of knowledge; 3) the explosion of physical energy; 4) the explosion technology; and 5) the explosion of world-wide idealogical conflict." With reference to these six statements, the author describes the "task of our schools . . . as that of providing education and training for 'vastly increased numbers of individuals,' and at 'sharply heightened levels' of understanding, competence, and skill." The latter portion of this essay concerns itself with four major categories of curriculum change - current and future - aimed at re-defining and improving teaching and learning. These are described as: 1) "Efforts which are aimed at systematic attack on the problem of subject matter as a continuum throughout the entire range of our educational system; 2) Efforts which are directed to improve integration of subject matter and the new resources for teaching and learning of this subject matter; 3) Efforts which focus on improvements directed to both ends of the spectrum of individual and group differences; and 4) Efforts which free both the teacher and learner to make fuller use of their unique individual competencies."

135. Rossi, Peter H. and Bruce J. Biddle (eds.). 1966. The New Media and Education: Their Impact on Society. Garden City, N. Y.: Doubleday & Co., Inc. (Anchor Books). 460 pp.

In a group of articles authored by fourteen prominent sociologists and psychologists, the new educational media and their importance to education are examined. In addition to a general discussion of the new media, an analysis and description of various types of media, their uses in different educational situations, the problem of their acceptance in the schools, and their impact upon education and Western society, are discussed. Focus is on the new media, in the form of programmed instruction, teaching machines, educational TV, and overhead projectors, etc., as leading to greater flexibility in education and to more easily meeting the needs of individual students. Also discussed is the idea that when the new media are accepted generally, they will revolutionize school design and planning. A collection of interdisciplinary readings presenting a view of the challenges the new media offer schools, teachers and students, and their potential impact on all of society.

136. Scanlon, Robert G. "The Expansion of an Innovation." Audiovisual Instruction. November 1968, pp. 947-948.

This article discusses Individually Prescribed Instruction

[IPI] as an instructional system from the point of view of administrative implementation. Listed are the six elements which distinguish IPI from the conventional school procedures. They are:

(1."Detailed specifications of educational objectives;
(2. Organization of methods and materials to attain these objectives;
(3. Careful determination of each pupil's present competence in a given subject;
(4. Individual daily evaluation and guidance of each pupil;
(5. Provision of frequent monitoring of student performance, in order to inform both the pupil and the teacher of progress toward an objective; and
(6. Continual evaluation and strengthening of the curriculum and instructional procedures."

The article also outlines Research for Better Schools' [RBS], a Regional Educational Laboratory, field testing and dissemination of IPI. It was found that principals need help in three areas in dealing with IPI:

(1. Problems of organization;
(2. Problems of communication; and
(3. Problems relating to the need for retraining.

The author concludes that "IPI is one of the few educational endeavors based on research that uses up-to-the-minute information to constantly improve its techniques, procedures, and materials," and "the strategy for expansion of this innovation is a unique step in American education."

137. Slaughter, Robert E. "The Response of the Knowledge Industry to Society's Demand for a More Relevant Education." in Technology and the Curriculum, ed. Paul Witt, Teachers College Press, 1968, pp. 45-52.

Discussion centers around the notion of educational technology as being a "partnership enterprise" not dependent solely on the knowledge industry. The role played by educators, research laboratories, scholars, scientists, engineers, technicians et. al., is mentioned.

The author foresees the future of educational technology as moving in three directions: 1) "the use of computers in individualizing and managing learning; 2) an extension of the systems approach for the creation, development, and use of technology; and 3) a considerable extension of the utilization of transmission and other communications technology in order to bring more flexibility and efficiency to education."

138. Travers, Robert M. W. "Directions for the Development of an Educational Technology." in Technology and the Curriculum, ed. Paul Witt, Teachers College Press, 1968, pp. 85-101.

"Robert M. W. Travers notes that a sound technology of education cannot be developed either on the basis of evolving practical experience or by borrowing from other areas but must be grounded on scientific knowledge regarding learning. He points out the limitations of using the research on operant conditioning as the sole basis for developing educational technology and suggests additional sources of knowledge, including several illustrative psychological concepts" namely: 1) man is a highly social species; 2) adequacy of intellectual development is highly dependent upon the properties of the physical and social environment in which development takes place; and 3) the placement of information in the human memory system is very time-consuming. These concepts, the author contends, should be considered when designing the new media.

The author "decries the use of new media to achieve traditional goals and urges. . .that the new technology be related to new objectives. He is . . . critical of efforts to employ the new technology to speed up learning, especially the kind that takes place in most schools." Rather, he maintains, "educators should be seeking ways to help people make better use of knowledge and to learn to use knowledge-storing devices effectively and efficiently."

139. ______________. Innovation in Education: New Directions for the American School. A statement on national policy by the Research and Policy Committee of the Committee for Economic Development, July 1968, 75 pp.

This booklet concentrates on instruction in the secondary and elementary schools. Its main emphasis is on the need for improving instruction techniques and processes so that those children from culturally deprived backgrounds can achieve an education as good as that received by those from affluent families.

Based on the committee's investigations four imperatives for education are discussed:

(1)"The American school must be better organized for innovation and change.

(2) There must be an increasing emphasis on both basic and applied educational research and on the dissemination and practical application of that research. The useful and effective must be distinguished from the nonproductive and wasteful through developmental studies employing research findings.

(3) School systems must employ continuously the results of cost-benefit and cost effectiveness analyses in order to allocate effectively the resources available to education and to distinguish among programs of high and low priority.

(4) There should be established a national Commission on Research, Innovation, and Evaluation in Education to

> encourage intensified and widespread research, development, and evaluation bearing on all aspects of education as a means to more effective methods of instruction."

In this statement by the Committee for Economic Development a heavy stress is placed on the need for greatly intensifying and expanding all aspects of research and development. The report includes specific examples of areas in which more and better research is urgently needed. A major emphasis is also on the new resources for learning indicating that their greatest contributions as educational instruments are when developed and employed as integral parts of instructional systems.

Included in the booklet is a section of critical comments on the author's suggestions and the content of the report.

140. ____________. Educational Television, The Next Ten Years. U. S. Office of Education, OE-34036, Title VII, Part B, 1964, 375 pp.

A series of documents, this book contains the following topic headings concerning educational television: Recommendation; Television's Future in Education, 1961-1971; Educational Television's Community Job, 1961-1971; The Problem of Improving Programs, 1961-1971; The Problem of Financing, 1961-1971; The Problems of Resources and Facilities, 1961-1971; and an Appendix.

141. ____________. "Final Report of the Meeting of Experts on the Development and Use of New Methods and Techniques in Education" in New Methods and Techniques in Education, No. 48, Unesco, 1963.

This paper contains the conclusions reached by a meeting of educators, psychologists and communications experts at UNESCO House in Paris, March 1962, "for the purpose of examining effective means of using new methods and techniques which could be applied to major problems of education." Discussed is "the nature of the new methods and techniques of: 1) communication and teaching already in use or likely in the next ten years to make a significant contribution to education, educational administration or evaluation; 2) the educational sectors (school, out-of-school, adult) to which these techniques may most effectively be applied, and the principle needs which prompt their use; 3) the psycho - socio - pedagogical problems raised by the introduction of these methods, and the re-evaluation of traditional educational processes which their application entails; 4) the implications of these new methods for the structure and organization of educational systems and for the teaching profession; 5) the economic implications of applying these techniques, and the criteria for comparing the relative cost of traditional systems and of those incorporating the new techniques; and 6) the types of experimental and theoretical research required, the priority fields and the type of action to be envisaged for long-range developments."

SECTION VI

Selected Proposals for Media Training

Overview of Section VI

This section simply summerizes the objectives and plans of several proposals for training media personnel. No effort was made to judge the quality of the proposals or programs represented.

142. Black, Harvey B. "Doctoral Program in Audiovisual Communication Research." Title IV, $214,000, Indiana University, Bloomington, Indiana, 1967-72.

The objectives of this three year program include emphasis on audiovisual communications. Research skills will be developed through participation in a series of courses providing traditional foundations in behavioral science content and methodology.

143. Bondra, George and Thomas Sobol. "Procedures for Creating a Media Environment to Help Change Teacher Role to Guiding Independent Learners." Title VII-B (NDEA), $194,343.00, Bedford Public Schools, Mount Kisco, New York, 1965-1968.

The objectives include: the individualizing of instruction by use of a dial access system; the individualizing of instruction through team teaching; and the transforming of teacher's goals from those related to disseminating information to the guiding of independent learners.

144. Brumbaugh, Donald W. "NDEA Institute for Advance Study in Educational Media." Title XI (NDEA), University of Utah, Salt Lake City, Utah, 1967.

Objectives sited are as follows: (1) to engage in a broad survey of media including function of materials, methods of evaluation and selection, and proficiency with the equipment; (2) to engage in materials preparation including skills for local production, (i.e. transparencies, picture mounting, lettering, enlarging, layout and composition), and the ability to visualize, simplify and analogize; and (3) to deal with the administrative responsibilities of the building coordinator including theory in communication, theory of learning, nature and practice of leadership, understanding of and acquaintance with research in media, understanding of working relationships, purposes and procedures of school libraries, understanding of equipment, programmed learning and the relationship between studio and classroom teacher in educational television.

Criterion for eligibility include: a bachelor's degree, three or more years successful teaching experience, above average scholastic ability, and present employment as a media specialist or building coordinator. . .or assignment to such a post for the next school year. Evaluation made by: consensus of opinion by the staff; a participant questionnaire; and the director's evaluative comments.

145. Davis, Dr. John. "An Institute to Train Specialists in Instructional Resources for Elementary Schools." NDEA, duration: 8 weeks, participants: 36, $60,511.00, Washington State University, Pullman, Washington, 1967.

The institute's objectives are listed as: to provide instructional resource specialists in the elementary school with the minimum competencies needed for library service; to provide instructional resource specialists with the minimum competencies to select, develop, use, and evaluate non-print educational media; to develop skills for these specialists in working with other elementary teachers; to develop increased knowledge on the part of the specialists of the new curriculum developments in grades one through six; to enable the specialist to organize the varied functions of his position in a systematic manner, to classify certain of these functions as technical or clerical, and to train paraprofessional assistants to perform these functions.

Criterion for eligibility include: a regular teaching certificate for the elementary grades in the states of Washington and Oregon; a minimum of two years successful elementary experience; recommendations from three persons qualified to judge their professional competence - including their school principal; and a statement from the school district that on graduation from the institute, the participant will have duties which are characterized in this proposal as those of an instructional resource specialist for an elementary school.

Evaluation to be carried out by: submission of printed and visual evidence of achievement; demonstration of solutions to typical problems involving elementary school use of instructional media; and a follow-up questionnaire to participant while on the job.

146. Deterline, William A. "Development of a Programmed Course for Group Instruction of Secondary Teachers and Administration in the Techniques of Instructional Technology." Title VII A, duration - 50 class hours, $83,797, General Programmed Teaching, Palo Alto, California, 1967-1968.

The objective is stated as the preparation of a programmed instruction course for group presentation that will provide teacher training in the principles and specific techniques of instructional technology, instructional systems, and their application to the design of instructional materials and presentations of various kinds.

Evaluation measures include a series of tests and subsequent revisions and an implementation manual - to be prepared and revised.

147. Garrison, Dr. Cecil. "NDEA Summer Institute for Educational Media Specialists." Title XI (NDEA), Participants: 35, Duration: 7 weeks, Arkansas State Teachers College, Conway, Arkansas, 1967.

The objectives are listed as: to upgrade the knowledge and skills of participants in instructional technology so as to enhance the quality of teaching and learning in schools of this area; to train people who can furnish leadership in the schools in the improvement of teaching skills and techniques; to encourage teachers to incorporate principles of learning into teaching procedures; to stimulate greater interest in educational media in both college departments of education and the public and private schools of the area; to develop competencies in the usage of educational media; operation of the equipment will also be stressed; and participants will be expected to 'reformat' their methods of teaching to the point that renewed emphasis will be placed on processes which transpire within the learner.

The criterion for eligibility include: a bachelor's degree; demonstrated academic competence; 2 years teaching experience; a preference to Arkansas teachers; a recommendation by the local administrator; and a signed oath of affirmation before attending. Final selection made on basis of college GPA; degree of participation in major academic field; background teaching experience; and employment in the capacity of audio-visual coordinator on at least a part-time basis.

Evaluation of the institute was primarily based upon the personal opinion of participants and staff.

148. Hyer, Anna L. "Manpower and Instructional Media--A Study of Jobs, Personnel and Training." PL 88-21, $115,824, National Education Association, Washington, D. C., 1968-69.

The objectives of the study include: (1) the analysis of manpower development in the instructional media --- analyzed as follows; analysis of personnel functions and skills, the analysis of the job market in relation to these skills, and the analysis of training programs for these skills and; (2) the establishment of guidelines and suggested model curriculums for media training programs.

149. Mars, Walter J. "A Project to Improve Instruction in Teacher Education Through the Increased and Better Use of the New Educational Media." Title VII A, $118,245, American Association of Colleges for Teacher Education, Washington, D. C., 1966-68.

Objectives are listed as: (1) to develop media workshops and, (2) to develop a programmed demonstration instrument. The target audience includes: college administrators, faculty, media specialists, students in training, public school cooperating teachers, district curriculum personnel, school board members and the general public.

150. Miller, Elwood. "An Institute for Faculty Improvement in Media Applications to Undergraduate Instruction." Title VI-B (HEA), Michigan State University, East Lansing, Michigan. Duration: 36 weeks, participants: 20 full-time, 20 part-time, 10 part-time.

Objectives of this institute include identifying and analyzing specific instructional problems; differentiating between the communication potential of the various media and evaluating pertinent materials in terms of practicality and effectiveness; analyzing and applying media components effectively in the solution of an instructional problem; gaining practical experience in the use of the several media through experimentation in large group, small group, and individualized instruction situations; and becoming acquainted with local, state, and federal sources of support for instructional improvement programs in their home institutions.

Criterion for eligibility include: ---those twenty full-time participants should be faculty members, or if preparing to be faculty, must be willing to make use of educational media in the teaching of undergraduates; should be specialists, or preparing to be specialists, in educational media; should be librarians, or preparing to be librarians, with substantial responsibility for the coordination or use of educational media in undergraduate instruction; and these candidates should be willing to pursue a major or minor in instructional media. The twenty part-time participants should be undergraduate faculty within commuting distance, and the ten part-time participants must evidence a desire to improve instruction through the application of media.

No evaluation measures were stated.

151. Nicholas, Dr. Robert A. "NDEA Institute for Advanced Study in Educational Media." Title XI (NDEA), Duration: 8 weeks, Participants: 40, Oregon State System of Higher Education, Corvallis, Oregon, 1967.

The objectives of this institute are listed as: (1) to train teachers and librarians who can work as educational media building coordinators; and (2) to develop a building coordinator's manual.

The criterion for eligibility include: two years as a full-time teacher and/or librarian in an elementary or secondary school; be under contract to teach in Alaska, Hawaii, Idaho, Montana, Oregon or Washington during 1967-68 with at least part-time responsibility assigned as educational media specialist; have completed a course in AV, but no more than 12 quarter hours; have not previously participated in an NDEA institute in media.

The evaluation measure is the opinion of staff, director and participants.

152. Nicholas, Dr. Robert A. "NDEA Institute for Advanced Study in Educational Media." Title VI (NDEA), Duration: 8 weeks, Participants: 50 Oregon State University, Corvallis, Oregon, 1966.

The objective of this institute is stated as: to train teachers and librarians who can work as educational media building coordinators on a full or part-time basis in an individual school building.

The criterion for eligibility include: two years full-time experience as a teacher or librarian in an elementary or secondary school; under contract to teach in Alaska, Hawaii, Idaho, Montana, a region of Washington during 1966-67, with at least part-time responsibility assigned as educational media specialist; must have completed a basic course but no more than 12 quarter hours in AV courses.

Evaluation by opinion of staff, director and participants.

153. Parker, James E. "Experienced Teacher Fellowship Program for Educational Media Specialists in Disadvantaged Schools." Title VI, duration: academic year, participants: 16, North Carolina College, Durham, North Carolina.

Objectives are listed as: to establish specific plans for the organization and administration of instructional materials centers in participant's respective schools; to locate, evaluate, select and utilize audiovisual materials to achieve specific instructional objectives; to produce and to assist other teachers in the production of transparencies, slides, tapes, photographs, flannel boards, charts and displays; to plan and execute short-term in-service media workshops designed to upgrade the competencies of teachers; to demonstrate facility with audio-visual equipment and with the exercising of controls over the physical environment in which media are used; to demonstrate knowledge of the psychological and philosophical foundations of educational technology; to structure research designs for evaluating the effectiveness of media and to demonstrate increased proficiency in teaching a subject matter area.

Criterion for eligibility include: admittance to North Carolina College graduate school; a recommendation by the local school district; an elementary or secondary teaching degree and a desire to return (after graduate study) to the same school system.

The methods of evaluation are: (1) a thesis on media, and (2) individual study projects.

154. Parker, James E. "An Experienced Teacher Fellowship Program Leading to the Master of Arts Degree to Prepare Media Specialists for Elementary and Secondary Schools that Have Higher Concentrations of Disadvantaged Youths." Title VI-B (HEA), Duration: 1 year, participants: 16, North Carolina College at Durham, Durham, North Carolina, Sept. 68-Aug. 69.

The participants of this fellowship program should, as indicated by the objectives, be able to: recognize the instructional values and limitations of all types of educational media; engage in constructive dialogue relating to the use of media; identify characteristics of disadvantaged children which most often inhibit the achievement of school objectives; apply principles derived from learning theory which are relevant to day-to-day teaching situations; evaluate, select, plan and produce instructional materials to meet the needs of a group of disadvantaged learners; plan, organize, and administer an instructional materials center in an elementary or secondary school; assist elementary and/or secondary school teachers to select, evaluate, and to make effective use of instructional materials; design and conduct practiced, small-scale research projects to test the effectiveness of, to determine the feasibility of, or to analyze the content of instructional materials or devices; exhibit habits of reading that are essential to keeping abreast of technological and curriculum innovations, and for taking advantage of significant findings of educational media research; plan and execute short-term in-service education workshops relating to instructional technology; develop plans for building or remodeling and equipping instructional materials centers; and participate in local and national professional organizations and conferences relating to educational media.

Criterion for eligibility include: standard selection in graduate school for either Master's or Doctor's degree; nomination by officials of an individual school system or individual application; and three competent references.

Evaluation will be accomplished by: (1) mid term, first semester, and interim evaluation; (2) luncheon meetings; (3) steering committees; and (4) follow-up by questionnaire.

155. Parker, James E. "NDEA Institute for Advanced Study for Educational Media Specialists." Title XI (NDEA), North Carolina College, Durham, North Carolina, 1967.

The objectives include: to organize and administer new media programs in schools; to select, evaluate, and produce materials of instruction; to utilize instructional media in an integrated way in order to achieve a maximum degree of reinforcement; and to communicate effectively with other teachers in a way that will assist in the development of understanding, abilities, skills, and competencies with respect to new instructional media.

The criterion for eligibility include: a bachelor's degree from an accredited college; admission to graduate school at North Carolina College; a willingness to complete a follow-up questionnaire during the following year; evidence of media responsibilities; evidence of successful teaching experience; and recommendation by a superintendent.

The measures for evaluation include: a participant rating of various phases on a 5 point scale; a participant opinion in writing; staff opinion, and a pre-test -- post-test.

156. Sherman, Wendel. "A Study to Formulate Quantitative Guidelines for the Audiovisual Communications Field." Title VII A, $44,273, Indiana University, Bloomington, Indiana.

A rationale will be developed for determining audiovisual needs (including equipment, material, personnel, and monetary needs) at all educational levels to be used in the preparation of quantitative "audiovisual-needs" guidelines for schools.

157. Sister Gilmary. "Educational Media for Improvement of Teaching of Reading." NDEA. Duration: 6 weeks, participants: 35, $43,441, Marygrove College, Detroit, Michigan, 1968.

The objectives include: becoming familiar with the array of instructional media available for improvement in the teaching of reading; discovering the contribution of A-V media in the learning process and the applying of these principles to the reading-learning process; understanding the new role of A-V technology in the learning process, especially as it pertains to reading; being able to operate, manipulate or devise materials; being able to select, apply, and appraise various A-V methods in the field of reading; preparing some sample, creative reading materials designed for their own setting; and becoming acquainted with the newer reading programs and innovations which incorporate media in some way.

Criterion for eligibility include: a bachelor's degree; 3 years teaching experience; a teacher of classroom reading at the elementary or junior high levels with educational media available; recommendation from the principal; and a transcript of credits.

Evaluation designed to be carried out by a post-test and a follow-up questionnaire.

158. ________. "A Faculty Development Institute in Educational Media." Title VI (HEA), $21,828, duration: 3 weeks, participants: ten teams of 3 each, San Jose State College, San Jose, California.

Objectives are listed as: to explore recent trends in educational media use. . .innovations for improved instruction, space design and instructional support facilities; to develop the ability to analyze course content and pull out instructional objectives; using these objectives, to determine learning configurations; to analyze and specify space requirements; to select appropriate technology and design media for use in each of the configurations; and to arrive at some means of evaluation of the procedure as selected and developed.

The criterion for eligibility to attend the institute are listed as follows: institutions represented will send a team of three participants. . .a media person and two faculty members; participants will have a minimum of two years of teaching experience, a potential for teaching a minimum of ten additional years and; excepting for the media person, the participants will have a minimum of formal courses in educational media.

Evaluation will be by written critique on the part of each participant.

159. __________. "An Institute for Faculty Improvement in Media Applications to Undergraduate Instruction." Title VI B (HEA), duration: 38 weeks, participants: 50, $224,458, Michigan State University, East Lansing, Michigan 1960-1969.

Objectives are stated as: to establish a framework whereby participants will be better able to; (1) identify and analyze specific instructional problems; (2) break these problems into their principal components; (3) differentiate between the communications potential, practicability and effectiveness; (4) analyze and apply media components in the solution of an instructional problem, and develop discrimination in terms of effectiveness and efficiency; (5) experiment, individually or in groups, with new media applications in large groups, small groups and individualized instruction; (6) gain practical experience in the use of several media through application; and to (7) become acquainted with local, state and federal sources of support for instructional improvement programs in their home institutions. The related objectives include allowing the MSU Instructional Development Service to experiment with methods whereby members can best be made competent in instructional development procedures including media applications, and increasing the number of instructional development type media professionals available to undergraduate college programs.

The criterion for eligibility to attend the institute are: participants must be faculty members (or preparing to be so) who will make use of educational media in training undergraduates; or they must be media specialists (or preparing to be so) with undergraduate programs; or must be librarians and other specialists who have responsibility for coordination or use of media in undergraduate programs. A list of priorities is given.

The final four days of the institute are to be devoted to evaluation.

160. ________. "NDEA Summer Institute for Educational Media Specialists." Title XI (NDEA), duration: 6 weeks, participants: 32, San Jose State College, San Jose, California, 1966 and 1967.

The objectives of the institute are set forth as: to develop a rationale relating all types of media to instructional and curricular problems; to develop the ability to locate, evaluate, select, and utilize these media in the classroom; to develop ability in the production of simple and inexpensive instructional materials; to gain facility in applying such newer media as television, self-instruction, and 8mm films in classroom instruction; and to gain an 'in-service' approach so as to be able to assist teachers in the utilization of the new media.

Criterion for eligibility to attend the institute include: participants must have assumed broad responsibility for media coordination in a single school building; must have had minimal experience in the media program for which they have responsibility or will have in the coming year; selected on basis of their "ability to benefit" and "capacity to develop professionally;" must have written recommendation of the supervisor; priority considerations given to teachers with a minimum of three years teaching experience; and ineligible if previous attendants of Title XI or VI.

Evaluation measures were not listed.

161. ________. "Revisions, Amplification, and Continuation in 1968 of Compilation and Distribution of the EMC Directory of Summer Session Courses on Educational Media in a Fifth Annual Edition." Title VII A, 1968-69.

The objectives are: to meet the needs of teachers, librarians, and many others involved in educational programs for knowledge and understanding of the uses of all educational media in the teacher-learning process.

Evaluation to be accomplished by questionnaire to 1,200 institutions of higher learning.

SECTION VII

Media Competencies for Teachers

Overview of Section VII

Explored in the following section are the implications of research in the new educational media on the role of teachers and teachers in preparation. Reports and articles annotated included those which deal with the competencies needed by teachers in the use of the new media as well as those which have as their main concern the teacher's role in relation to these media.

162. Fulton, W. R. "Audio-visual Competence and Teacher Preparation." The Journal of Teacher Education, 1960, 11, 492-496.

Article offers general areas of audiovisual competence for teachers: 1) "A working point of view with respect to audiovisual materials; 2) knowledge about and experience in locating, selecting, evaluating, and using all kinds of audio-visual materials; 3) ability to prepare some of the simpler types of audio-visual materials; and 4) skill in the operation of common types of audio-visual equipment." Author argues for "A well-planned, comprehensive program for evaluating the extent to which prospective teachers have achieved competence in the use of communicative media" and offers some suggested evaluative measures for each of the four areas of competencies stated above.

163. Fulton, W. R. and Frederick A. White, "What Constitutes Teacher Competence in Audio-Visual Communication?" Phi Delta Kappa, 1959, 40, 158-160.

The preparation of teachers in the utilization and selection of audiovisual communication media is explored with emphasis on competencies required and methods of achieving competence.

164. Gerlach, V. "Selecting an Instructional Medium." In W. C. Meierhenry (ed.), Media Competencies for Teachers, National Defense Education Act, Title VII, U. S. Office of Education Contract No. 5-073-2-12-6, University of Nebraska, 1966.

This article discusses approaches and criteria used in the selection of a medium for classroom use. Behavioral objectives are discussed as well as media characteristics.

165. Kemp, J. E. "Identification of Pre-Service and In-Service Teacher Competencies in the Area of Audiovisual, Production Techniques." In W. C. Meierhenry (ed.), Media Competencies for Teachers, National Defense Education Act, Title VII, U. S. Office of Education Contract No. 5-073-2-12-6, University of Nebraska, 1966. pp. 127-166.

Investigates the problem of design of material in the new teacher education. Discusses both the selection of appropriate media and the production of the medium by the teacher.

166. McMahan, Marie E. "A Study of the Feasibility of a System of Pre-Service Teacher Education in Media." Thesis for Doctor of Education, Michigan State University, 1968, 184 pp.

"This study investigated the feasibility of designing a system for developing media selection and utilization competencies in existing education and methods courses by: (1) identifying nine desirable competencies for initial development at the pre-service level, (2) procuring the judgments of representative elementary education professors at Michigan State University regarding optimum points in the elementary course sequence for initial development of each competency, (3) deriving system design procedures from the literature, and (4) testing on a pilot basis in one course the system procedures for developing media selection and utilization competencies."

167. Norberg, K. "Theoretical Background Required By Teachers in the Use of Newer Media." In W. C. Meierhenry (ed.), Media Competencies for Teachers. National Defense Education Act, Title VII, U. S. Office of Education Contract No. 5-073-2-12-6, University of Nebraska, 1966. pp. 33-67.

This paper considers a wide range of theories which may be used as the basis of the content, process, and experience decision by instructional systems specialists. The author stresses the S-O-R theory as being the one in most current use.

168. Schueler, H., and Lesser, G. S. Teacher Education and The New Media. Washington, D. C.: American Association for Colleges of Teacher Education, 1967. 122 pp.

A report of a study conducted on the position of the new media in today's teacher education. Characteristics of teacher education programs and of the new media are discussed. Research evidence is also presented.

169. Torkelson, G. M. "Competencies Needed By Teachers in the Use of Newer Media and Various Approaches to Achieving Them. In W. C. Meierhenry (ed.) Media Competencies for Teachers. National Defense Education Act, Title VII, U. S. Office of Education, Contract No. 5-0730-2-12-6, University of Nebraska, 1966. pp. 169-211.

In this paper Torkelson proposes a new program of teacher education.

170. Torkelson, G. M. "Implications of Research in Newer Education Media for the Role of the Teacher and for Teacher Education." in Newer Educational Media, Pennsylvania State University, 1961, pp. 67-87.

In this article the implications of the affect research in the new educational media has on the role of the teacher and teacher preparation is explored. Teacher education trends are seen as being: 1) a movement toward joint responsibility for teacher education; and 2) trends in the direction of greater collective responsibility for teacher education between colleges of education and academic departments. In demonstrating that the role of the teacher requires knowledge and use of the newer media, eight learning principles by William H. Burton are presented along with their relation to instructional media as substantiated by research. Quoting research results that add further emphasis to the thesis, the author closes concluding that the training of teachers in newer media is essential.

Extracted from the article is the following program outline for training teachers in media:

Teacher Preparation - - - Pre-Service

1. "Academic preparation should be consistent with the demands of the teaching task, determined through the joint efforts of professors of academic subjects, education professors and public school people, with professors of academic subjects exemplifying their own effectiveness through the use and experimentation with various media and techniques in their own teaching.
2. Professional preparation should integrate ALL points by example - the best that is known about teaching with audio-visual media.
3. Provisions should be made for adequate facilities and opportunities for pre-service teachers to learn about and to use the latest instructional media - - - including television and auto-instructional devices - - whether through a separate course or courses or through some other arrangement for training. This preparation should include the incorporation of these media in student teaching situations and the latest technological advances should be employed for observing and recording classroom performance.
4. Careful evaluation of teacher competencies in the use of instructional media before graduation and in follow-up should be made for purposes of assessing obstacles to effective preparation and use in teacher training institutions and in public schools.
5. Instructional materials centers should be maintained in appropriate teacher training institutions which may act as centers for service to surrounding areas and as centers for continuing experimentation in the many problems associated with effective use of these media.

Teacher preparation - In Service

1. There should be continuing, well-organized, well-equipped and professionally staffed programs for in-service preparation and evaluation in the use of instructional media in the public schools - either within a school system - or regionally. This teacher preparation may also include the use of filmed or t.v. courses to inform new teachers and to keep experienced teachers up-to-date.
2. There should be a reorganization of existing school structures, and the designing of new structures to provide flexibility for the

incorporation of the latest knowledge about audio-visual media and about the effects of varying class sizes as they relate to different types of learning situations.

3. There should be a stimulation of cooperative research research activities among professors of academic subjects, education professors, pre-service teachers, and in-service teachers in testing various media, methods and arrangements for achieving maximum student learning in public schools.

4. A production facility should be maintained in the school districts with professionally trained staff to provide faculty with specific types of teaching media not obtainable commercially.

5. As an inservice stimulus to greater professionalism, there should be professional recognition and reward for good teaching."

SECTION VIII

General Literature on Media Research, Selection and Evaluation

171. Allen, William H. "Media Stimulus and Types of Learning." Audiovisual Instruction. January 1967, pp. 27-31.

After pointing out the lack of a systematically organized set of operational procedures for selecting appropriate media for instruction in specific tasks, the author attempts to relate the audiovisual instructional media to the objectives of the field of art. These objectives (with references to such people as Gagne, Mager, and McLuhan) are listed as:

1) learning factual information
2) learning visual identification
3) learning principles, concepts and rules
4) learning procedures
5) performing skilled perceptual-motor acts, and
6) developing desirable attitudes, opinions, and motivations.

A step-by-step procedure for making the most effective application of instructional media to art teaching is given. Also included is a selected list of references and two tables. One is entitled, "Instructional Media Stimulus Relationships to Learning Objectives." and the other is "Equipment/Media Relationships and Considerations."

172. Birnbaum, Martin J. "The Use of Media in the Teaching of Poetry." Final Report CORD Project in the Teaching of Poetry, Teaching Research, August 31, 1969.

"This report describes unique instructional problems of teaching introductory courses in literature, then describes the specific learning objectives, the means to achieving said objectives, and the results of the research procedures employed. Also included are the problems encountered and overall assessment of achievements as well as prospects for future application.

As a result of the project, two texts were developed by the author: an anthology of poetry and a workbook published at OCE in Monmouth (OSSHE); and An Introduction to Poetry. Text includes critical commentary regarding the subject matter. Assignments are coordinated with a series of specially prepared tapes."

173. Dawson, P., Johnson, J., and Paulson, F. L. The Media Attitude Profile (MAP), Teaching Research, U. S. Office of Education Grant No. OEG-0-9-144837-1891-725, 1969.

The MAP is a 57-item test designed to measure attitudes toward various aspects of media and instructional technology. The MAP was developed as part of a national survey by Teaching Research Division of the Oregon State System of

Higher Education, Monmouth, Oregon. Validity and reliability data were obtained during the latter part of the 1968-69 academic year.

The test yields an attitude profile in terms of eight sub scales as follows: (1) a T-scale, measuring attitudes toward the effects of media and instructional technology (MIT) on teachers; (2) an S-scale for attitudes related to the affects of MIT on students; (3) a TO-scale, sampling attitudes toward the involvement of teacher associations with MIT; (4) an F-scale, for attitudes on the future of MIT in the schools; (5) a Dp-scale, measuring attitudes toward the possible depersonalizing affects of MIT; (6) a Th-scale, determining attitudes toward the potential threatening affects of MIT for teachers; (7) an MS-scale, to sample attitudes toward media personnel in the schools; and (8) a g-scale to measure general attitudes toward MIT.

This instrument will undergo its second major revision during the 1969-70 academic year, and will be used in several research, development and training projects throughout the year.

174. Ewing, Gerry, Floyd Urbach and Terry Toedtemeier. The Environmental Spiral. A Multi-Media Presentation, Special Media Institute Program, Teaching Research, 1969.

A large screen, eight slide-projector presentation, The Environmental Spiral deals with: 1) the man-machine world of today and tomorrow; 2) education as facilitated by instructional technology; 3) the system and ecology of educational institutions; and 4) the response of students involved in dynamic learning situations.

As indicated by the title, the presentation develops its theme in a spiral rather than linear format.

175. Ewing, Gerry and Dr. Kenneth Silber. The Abbreviated Mind. A Multi-Media Presentation, Teaching Research, 1969.

A 16 minute presentation, The Abbreviated Mind is shown on three screens side-by-side. Currently the presentation is shown with three 16mm motion projectors and three carousel projectors that are programmed by a punched-paper-tape reader. A new version is in the process of being developed which will use a single 16 mm projector with a special lense.

The Abbreviated Mind presents, explains, and promotes media by way of media. By juxtaposing, comparing and contrasting the mediated with the non-mediated, the presentation shows the dynamics of media as compared with traditional practices of education. The power of media to deal with both the affective and cognitive domains of the learner is a sub topic.

176. Hartsell, Horace C. and Richard A. Margoles. "Guidelines for the Selection of Instructional Materials." Audiovisual Instruction. January, 1967, pp. 23-26.

In making decisions on the selection of instructional materials, the authors point up the too frequent reliance on the "wants" of the teacher rather than on the "ought to be available" for the learner. The authors consider the key curriculum issues to be:

1)"need for establishing priority,
2) importance of learning how to learn,
3) need to see the school program as a totality, and
4) caution in promotion of 'easy to adopt' packaged program."

The assumptions underlying, and actual guidelines proposed, constitute the bulk of the article.

177. Leverenz, Humboldt W. and Malcolm G. Townsley. "The Design of Instructional Equipment: Two Views." Occasional Paper No. 8, Department of Audiovisual Instruction, 1962, 51 pp.

An introductory essay by James D. Finn discusses the magnitude of the design problem in regards to instructional technology. The first paper, by Humboldt Leverenz, takes a developmental approach to the entire area of teaching, culture and instructional equipment design with an emphasis on the need for a "Prime-mover" agency to combine the talents of teacher and techniker in the design of more useful equipment. The second paper, by Malcolm G. Townsley, addresses itself "to the problems associated with economics and organization as they affect the design process." At the end of each paper is a bibliography - - the one for the latter paper prepared by Donald G. Perrin.

178. Lumsdaine, A. A. "Graphic Aids and Mock-Ups," in Educational and Training Media: A Symposium, National Academy of Sciences - - National Research Council, Publication 789, Glen Finch, ed., August 1959.

In summary, the author offers a brief list of prescriptive maxims to be considered by the designer of training devices. These include: 1) "First find out just what the trainee really needs to learn in order to do his job. Eliminate everything else from consideration; 2) Make an all out effort to devise ways in which students can attain this learning individually, through active, appropriate, guided practice. Select or design devices appropriate to the specific learning outcomes needed; 3) Avoid the group lecture method except as a last resort. If you must use it, examine earnestly the quality of the instructors you must depend on. If the survey shows what it often shows, use one good instructor, and tape record or film his presentation; 4) Religiously pretest or try out the presentation, and the devices it is to use progressively de-bugging them by at least a few tryouts with small groups of students; 5) Even in the classroom situation, make every effort to have extensive provision for well-guided, active student response and practice, through class participation exercises that provide immediate feedback; and 6) Use inexpensive classroom aids. Reserve expensive mockups for uses in which their expensive properties will pay off, namely, to provide guided, pre-operational practice in those problems and procedures that required such practices."

179. Lumsdaine, A. A. 1963. Instruments and Media of Instruction. In: Handbook of Research On Teaching, N. L. Gage, ed. Chicago, Ill.: Rand McNally. Chapter 12, pp. 583-682.

Instructional media "as objects of experimental research," and particularly kinds of "experimental research which can result in improved prediction and control of the effects of instructional media in attaining specific outcomes," are the focus of this chapter. Research as "empirical inquiry which obtains new behavioral data -- data obtained and used either for specific applied (technological) purposes or to contribute toward principles and methods" -- is the orientation, reflecting principles and methods which represent, on the one hand, "a science of instruction firmly grounded in experimental findings, and, on the other hand, a technology of research methods that can be used to improve specific instructional instruments."

180. Nelson, Frank G. "Media, Meaning and Mediation: A Rationale for Media Use in the Arts and Humanities." Teaching Research, Paper presented at DAVI National Convention, Portland, Oregon, August 31, 1969. (Mimeographed)

The author presents a case for the specification of a unifying, conceptual base for media utilization in the arts and humanities. Three factors are seen as complicating the formation of this base:

1) The media assume a unique role in these fields in that "they are the elements studied and also the media used in the study;"
2) Instructional concerns in the arts and humanities lean more toward the affective area; and
3) New media forms or new combinations of existing forms facilitate the creation of new art forms.

Using the construct of "meaningfulness", the author discusses related concepts in learning and communication theory which could be applied to the inception of a conceptual base for media utilization. Hull's analysis of the manner in which response chains mediate complex behaviors; Tolman's principles of sign learning; and Osgood's mediation hypothesis and Principle of Congruity are seen as having particular relevance to both facilitating media utilization in the arts and humanities and the "development of an operational definition for 'meaning' as it may apply to learning."

Conclusions reached are that: 1) "the application of theories will facilitate utilization; 2) the principles cited and discussed can provide a methodology for giving the artifacts of concern meaning for an individual learner; and 3) knowing how meaningfulness may be established and possibly measured facilitates a synergistic development of media in the arts and humanities and provides for combination of new media forms which may lead to an extension of the arts themselves."

181. Torkelson, Gerald M. "What Research Says to the Teacher." National Education Association, Washington, D. C., 1968, 33 pp.

This is a very easy to read booklet designed for use by classroom teachers interested in the contributions of educational media to the teaching-learning process. The book is divided into four sections: (1) Media and the Educational Setting; (2) Understanding Media; (3) Utilizing Media in Teaching and Learning; and (4) Improving the Understanding and Use of Media.

A list of nineteen selected references is included.

182. Wagner, Robert W. "In Search of Design." in Technology - - Education, ed. by Donald P. Ely, Syracuse University Press, pp. 81-96.

"Professor Wagner questions the traditional approach to the production of instructional motion pictures, by introducing a new concept of developing a galaxy of films which serve to stimulate or point direction." This concept is shown in practice with the discussion of NDEA Project 03-3-16-020 the purpose of which was to produce "A Series of Motion Picture Documents of Communication Theory and the New Educational Media." The themes treated by film included: "The Communications Revolution," assisted by Wilbur Schramm, Gilbert Seldes, Edgar Dale, Marshall McCluhan, Keith Tyler and the author; "Models of Communication Theory" assisted by George Gerbner, Lawrence Stolurow, Jack V. Edling, Donald Bitzer, Bert Kersh, and Franklin Knower; "Perception" assisted by Kenneth Norberg, James Gibson and Hadley Cantrill; and "The New Media" assisted by James Finn, Charles Hoban, Jr., Sidney Pressey and Edgar Dale.

183. White, S. D., F. Leon Paulson and Kenneth H. Silber, "Effects of Manipulating Narration in Interaction With a Visual Presentation." Teaching Research Division, April 30, 1969. (Mimeographed.)

"The present investigation was designed to explore the effects on meaning of a complex visual presentation as a function of changes in the verbal message. 185 35mm slides were selected and programmed via three synchronized projectors. All images had a mechanical quality, reflecting a contemporary technological environment. In addition to images which were taken from the mass media, images of Pop, Op, Minimal, and Computer art were included. Slides were sequenced and superimposed according to design considerations (visual continuity and discontinuity) rather than by a 'story telling' logic.

Two of the three versions were narrated. In both, the subject matter was essentially the same, but the style and form of the narration differed. The first version had a conventional radio announcer's voice that presented a relatively straight forward discussion of the artist's attempts to reflect the technological environment in his art. The second version employed a flat, machine-like voice that spoke in phrases and single words. Often the narrating voice overlapped with itself. The subject matter was the same as the first version, but the style and form was more complex. The third version contained no narration at all.

Thirty-seven freshmen English students were randomly assigned to each of the three viewing conditions. The semantic differential technique was used to measure cognitive and affective responses to the three versions. An association technique was used to measure responses to visual relationships. Both techniques were pilot tested and modified for use in this experiment. The theory of complex simultaneously transmitted messages permitted the test of several hypotheses. Differences as a function of the viewing condition were observed in: 1) the way semantic differential responses were polarized, and 2) the pattern and frequency of association.

184. __________. "Guides to the Selection and Evaluation of New Educational Media." Audiovisual Instruction. January 1967, pp. 11-19.

This article is comprised of a list of one-hundred guides to the selection and evaluation of new educational media.

SECTION IX

Certification Requirements for Media Personnel

Overview of Section IX

This section includes all responses made by the nation's State Departments of Education to a query from the Media Guidelines staff regarding certification requirements for media personnel and/or guidelines for evaluating media training programs. Of the thirty-seven State Departments from whom information was received, twenty-seven replied that no specific guidelines were used for accrediting media training other than the general teacher certification requirements, and ten replied that some form of guideline statements was used. Ten states replied that they were in the process of preparing guidelines or of revising outdated guidelines. By far the most common form of guidelines identified in the several states that have them, was the inclusion of a section pertaining to the certification of media personnel in the document on teacher certification requirements.

185. Alabama

The state of Alabama is currently (February 1969) revising its guidelines for accrediting and evaluating courses in educational media.

186. Alaska

Accreditation procedures in Alaska do not contain specific requirements or guidelines pertaining to the accrediting or evaluating of media programs.

187. Arizona

At the present time (February 1969), the State of Arizona is preparing guidelines for standards in certification for specialists and directors of Educational Media. The earliest date anticipated for State Board action is July 1, 1969.

188. Arkansas

The state, at present, does not certify teachers in the Field of Educational Media.

189. California

The California State Department of Education does not have any specific guidelines used in accrediting media training or for evaluating the training of people in the educational media field. The state does have standards applicants are required to meet in order to qualify for a teaching and supervisory credential, and a job description of an audio-visual consultant. At the time of this inventory (February 1969) a committee is developing standards for the media credential. The results of this committee action are not intended to give guidelines for specific materials or techniques involved in a media course as these considerations will be left to the discretion of the individual college or university.

190. Delaware

At the present time (February 1969), the State Department of Public Instruction has no accrediting procedures for educational media training or for evaluation of the people in this area.

191. Florida

Presently (February 1969) persons seeking certification in educational media are required to meet the standards as outlined in the state's certification manual. These are as follows:

(1) Rank III Certificate. - -

(a) Bachelor's degree with a major in library and audiovisual service. (If a Bachelor's degree was required as a prerequisite to entering study for the Bachelor's degree in library and audio-visual service, the applicant shall be eligible for a Rank II Certificate.)

OR

(b) A Bachelor's degree, with twenty-four (24) semester hours in library and audio-visual service including the areas specified below:

1. Six (6) semester hours in books and related materials for young people.
2. Six (6) semester hours in organization and administration of libraries including a course in school library or material centers.
3. Two (2) semester hours in reference materials.
4. Two (2) semester hours in classification and cataloging.
5. Two (2) semester hours in audio-visual materials.

(2) Rank II Certificate. - -

(a) A Master's degree with a graduate major in library and audio-visual service (or a Bachelor's degree in library and audio-visual service if a Bachelor's degree was required as a prerequisite)

OR

(b) A Master's degree, with thirty (30) semester hours in library and audio-visual service including the areas specified above for the Rank III Certificate covering Library and Audio-Visual Service.

(3) Rank IA Certificate. - - Qualification for the Rank IA Certificate as specified in Section 4 (1) (b), Florida Requirements for Teacher Certification with thirty-six (36) semester hours in library and audio-visual Rank III Certificate covering Library and Audio-Visual Service. At least six (6) of the thirty-six (36) semester hours must be earned at the graduate level.

(4) Rank I Certificate. - -

(a) A Doctor's degree with a doctoral major in library and audio-visual service.

OR

(b) A Doctor's degree, with thirty-six (36) semester hours in library and audio-visual service including the areas specified above for the Rank III Certificate covering Library and Audio-Visual Service. At least six (6) of the thirty-six (36) semester hours must be earned at the graduate level.

The state is currently in the process of developing guidelines for approving programs for educational media specialists. These guidelines are being developed by the Teacher Education Advisory Council, a legally constituted body with a broad-based representation from the teaching profession as well as lay citizens. This task force has been assigned the responsibility of using the following criteria for developing the guidelines:

1. What behaviors of youngsters or services to the school are desired?
2. What competencies, skills, understandings and attitudes does a teacher need in order to develop these skills, competencies, understandings and attitudes?
3. What procedure should be followed and what criteria should be fulfilled for one to enter into a teacher education program for media specialists?
4. What follow-up data is necessary to determine how effective the program was in developing the skill in the teacher?
5. Do the guidelines apply to both preservice and inservice education programs?

192. Georgia

The State of Georgia does not have specific accreditation procedures for the training of educational media personnel.

193. Hawaii

The State of Hawaii has not yet formulated guidelines for the accrediting of courses in educational media training and/or evaluating the training for people in this field. A draft of such recommendations has been prepared by a graduate student at the University of Hawaii and is being considered by the Department of Education for adoption. (See annotation under "Proposal Reviews").

194. Idaho

The State of Idaho has no guidelines or criteria for evaluating its training courses but does have the following certification requirements pertaining to the educational media specialist: At least 24 semester hours in the general field of education media - 12 hours of which must be in: selection, organization, and administration of educational materials. Up to six semester hours in the subject areas listed below over and above any such hours which may be required for standard certificate may be substituted for an equal number of hours in the media field.

1. Philosophy of Education
2. Education Administration
3. Curricula design or Development
4. Educational Psychology or Theory of Learning
5. Pedagogy or Methods of Instruction
6. Child or Adolescent Psychology
7. Communications
8. Graphic Arts

195. Illinois

The State of Illinois has standard certification requirements as follows:

I. Standard Special Certificate for Instructive Materials Specialist (Endorsement):
  1) 32 semester hours in Instructional materials. 40% of that in AV, remaining 20% in either or both fields.
  2) Heavy concentration in cataloging, administration, production of AV materials should be avoided.
  3) Courses may be graduate or undergraduate.
  4) These are minimal requirements.

II. Standard
  1) 32 hours in audiovisual as follows:

a) Utilization of AV materials	6 semester hours
b) Production of AV materials	6 semester hours
c) Administration of AV program	3 semester hours
d) Research and theory of communication	3 semester hours
e) From preceding or supporting areas heavy concentration in one area should be avoided. Supporting courses - given by other school, college, department - contribute specifically to competence in AV education.	14 semester hours

  2) Graduate or undergraduate
  3) Minimal requirements.

III. Administrative certificate with supervisory endorsement (instructional materials):
  1) 16 or more hours (semester) in library science, 8 of which must be graduate.
  2) 16 or more hours (semester) in audiovisual education, 8 of which must be graduate.

196. Kansas

The state of Kansas has no specific accreditation procedures or requirements pertaining to the accrediting or evaluating of media program.

197. Kentucky

As of this date (February 1969) the Kentucky Department of Education has not developed guidelines for accrediting courses relating to educational media training or for evaluating the training of people in the educational media field.

198. Louisiana

The State of Louisiana has no specific accreditation procedures or requirements pertaining to the accrediting or evaluating of media programs. Specifications are made for persons seeking accreditation in the library field.

199. Maine

Certification requirements in Maine call for the applicant's completion of an approved program in the field or area in which they wish to teach.

200. Maryland

At the present time (January 1969) Maryland has no guidelines for the media specialist. Existing at present is the certification requirement for the traditional librarian which is under consideration for change. A document has been submitted in the form of proposed guidelines for the media specialist but has not been acted upon at this time.

201. Michigan

The State of Michigan has no special requirements for media personnel per se. Teacher education institutions in Michigan are approved according to a tentative set of policies and procedures.

202. Missouri

At the present time (January 1969), the Missouri State

Department of Education does not have special certification standards for media specialists. The legal requirements are that media specialists have Missouri teaching certificates. The classification standards for public schools recommend a full-time professional media director with a Master's Degree and special training in the area for a school system employing 100 or more teachers.

203. Montana

At the present time (February 1969) there are no specific certification requirements in the area of educational media.

204. Nevada

The State of Nevada includes, under its general certification requirements, a category entitled "Staff Specialist Endorsement" which includes authorization for those persons classified as educational media specialists.

205. New Hampshire

The State of New Hampshire has no specific guidelines in the field of educational media. The State is now (February 1969) in the process of adopting a new set of criteria for employment in the evaluation of Teacher Education programs in general.

206. New Mexico

The State of New Mexico does not have a method for certifying any of the media related jobs excepting for library certification. The problem is currently (January 1969) under study and so far the State is relying heavily on the new AASL - DAVI Standards for School Media Programs.

207. New York

Information received from the State of New York indicates the following certification requirements will be in affect September 1, 1969:

Certification of personnel required before educational communication centers can be established.

I. Director of Educational Communications (expanded role of audiovisual director):
   1) Anyone who serves in one or more of the following

media functions - development, coordination, supervision of media activities.

2) Supervises other professional media personnel.
3) Aids in in-service education and performance and appraisal of communications staff.
4) Permanent teaching certificate plus 3 years teaching experience.
5) 60 hours graduate study.
   a) 6 hours - fundamentals of administration
   b) 15 hours - educational communication
   c) 6 hours internship
   d) 33 hours additional graduate study
   e) Interim certificate issued if no more than 6 semester hours remain
   f) Minimum standards

208. North Dakota

The State of North Dakota has established criteria for certification of media personnel in which the types of courses required are indicated as follows:

I. Library - Audiovisual combination.
   1) Bachelor's degree:
   2) 21 semester hours in media education of which a minimum of 6 semester hours is required in each (library science and AV) selecting from following:
      a) Classification & cataloging
      b) Selection of media
      c) Materials for secondary education
      d) Materials for elementary education
      e) Media administration
      f) Utilization of media
      g) Design & production of materials
      h) Learning theory
      i) Special problems in media (research) (Maximum of 4 semester hours)

II. Audiovisual only:
   1) Bachelor's degree
   2) 1 or more years classroom teaching experience
   3) 12 semester hours distributed over the following:
      a) Design & production of AV materials
      b) Library (cataloging)
      c) Television
      d) Programmed instruction
      e) Selection of AV materials
      f) Utilization of media
      g) Communication theory

III. Media director:
   1) Master's degree
   2) Teacher's certificate
   3) 1 or more years classroom teaching experience

4) Must meet requirements for one of above categories (library only, library AV, AV only), plus additional training of 12 semester hours distributed over the following:
   - a) Educational administration
   - b) Elementary curriculum
   - c) Secondary curriculum
   - d) Supervision
   - e) School finance
   - f) School law
   - g) Educational psychology
   - h) Philosophy of education

209. Oklahoma

At the present time (January 1969) guidelines have not been developed by the State Department of Education for accrediting Educational Media Training. The State had a certification program for librarians for a number of years, and recently a program was adopted for the Audio Visual Specialist. A committee has been appointed the responsibilities of thoroughly studying media certification in the state.

210. Oregon

The Oregon Board of Education does not have any guidelines for accrediting courses relating to educational media training or norms for evaluation of the training of people in the educational media field. The Board has adopted approval procedures for all Lower Division Collegiate and Vocational-technical courses, but at the present time there have been no courses approved for training people in the educational media field.

211. Pennsylvania

The State of Pennsylvania has a set of guidelines used by visiting teams in approving programs for the preparation of instructional media specialists. The guidelines will be effective only until July 1, 1969 when they will be replaced by new guidelines presently being developed by the Bureau in cooperation with specialists from the field.

The present guidelines state: "There shall be a coherent program that includes a set of adequate objectives, a curriculum that will fulfill them, and a system of evaluation by which the program is assessed and revised in order to expedite achievement of the objectives. The organization and administration of the program, the staff, the resources, and facilities shall be adequate to attain the objectives. At present nine objectives are stated in the terms: "a graduate of the program shall be able to", and evaluation is specified as a continuing system carried out by an organizational administrative structure to assess the competence of graduates according to the objectives as stated.

212. South Carolina

At the present time (February 1969) the State of Carolina has no standards or guidelines for persons who use video processes for teaching nor standards relating to video training.

213. South Dakota

At the present time (January 1969), the State of South Dakota does not issue an endorsement on the general teaching certificate for educational media personnel. An endorsement is offered for persons in the field of library science.

214. Texas

The State of Texas has no specific media certification but for the past three years the State's audiovisual organization (Texas Association for Educational Technology) has been working on guidelines. The new joint standards for School Media Programs may significantly influence Texas Media Certification as well as the groundwork on media certification by a joint committee from Texas Association for Education Technology and Texas Library Association. Texas has librarian certification.

215. Trust Territory of the Pacific Islands

No guidelines for accrediting courses or for evaluating the training of people in educational media are available.

216. Utah

The State of Utah has guidelines for the selection, preparation and utilization of auxiliary personnel (teacher's aides) but not for educational media specialists per se. Professional media endorsement is specified as follows:

I. Professional media endorsement:
   1) 55 semester hours beyond BS or Master's Degree.

a) 30 hours as follows:
    Communication Theory
    Leadership and Supervision
    Information Retrieval and Data Processing
    Mass Media - Periodicals, Newspapers, Broadcast
     Media, Pamphlets
    Production
    Organization and Procedures
    Selection and Utilization of
     Print materials - Books, Children's Literature
     Adolescent literature, References, Bibliographies
    A.V. Materials - Projected, Audio Graphic
    Educational T.V.
    Programmed Materials
b) 25 hours - electives (approved).

2) 3 years experience (one year must be teaching).

3) Valid Teaching Certificate.

II. Basic Media Endorsement:

1) 12 hours in Media:
Production, Organization and Procedures, Selection of Print and Non-print materials, Categorizing and Classifying.

2) Bachelor's degree.

3) Teaching Certificate.

III. Auxiliary Personnel (Teacher's Aides).
Duties involving media are specified: showing a film, cataloging and classifying materials, preparing instructional materials. Utah has adopted the merger of school library and audiovisual programs.

217. Vermont

The State of Vermont does not have guidelines for determining the accreditation of courses relating to educational media training, or for the evaluation of the training programs that people in this field receive. State certification regulations are in the process of revision and the University of Vermont is being looked toward for recommendations as to what kinds of educational experiences that specialists in educational media should have.

218. Virginia

The State of Virginia does not at present (February 1969) have guidelines for accrediting courses relating to educational media training. Certification requirements are limited to those for specific endorsement in Library Science.

219. Washington

The State of Washington at the time of this survey (February 1969) is in the process of identifying behaviors that should be displayed by media personnel. It is estimated that this task should take a year or so. Certification will then be based upon behaviors. There is, at present, no special certificate, but guidelines are found in the state's publication of the booklet, _Program for the Learning Resources Center: Standards for Integrating School Library and Media Services_.

220. Wisconsin

The State of Wisconsin has the following criteria included in its certification standards pertaining specifically to the Media Specialist:

I. Audiovisual Director
  1) Those who direct, administer, advise, produce and distribute.
  2) Valid 4 year teaching certificate.
  3) 3 years successful teaching experience.
  4) Minimum of 15 semester hours.
    a) 2 or more semester hours in curriculum outside experience grade level, i.e., if experience is in secondary, course must be in elementary curriculum
    b) Basic AV course - Methods
    c) Production
    d) AV Administration
    e) Electives in related fields - MP productions, radio, photography, etc.
  5) If applicant has 3 years experience as AV director he may be awarded a provisional certificate (he must have given at least 28% of his time to AV job) must currently be designated AV director for at least 25% of time.

II. Audiovisual Coordinator - Media Specialists:
  1) Those who advise, produce and distribute.
  2) Valid 4 year teaching certificate.
  3) 4 semester hours (2 courses), one of which must be basic AV methods.

221. Wyoming

There are no specific qualifications related to media training or experience. The State does have tentative certification regulations for the field of Library Science.

SECTION X

Further Information Relating to Certification and/or Standards

222. Brown, James W. "The New Joint Standards: Implications for Manpower." Audiovisual Instruction, January, 1969, pp. 31-33

Five consequences of the new Standards for School Media Programs with regards to manpower are presented and discussed in this article. They are: (1) the effect of the Standards on the current supply of manpower - - due to its recommendations many, many more individuals will have to be trained; (2) "with the employment of so many additional personnel will come demands for greater manangement efficiency;" (3) new sources of media manpower will have to be found; (4) a clarification is needed of what the various kinds of media personnel must do on the job; and (5) more effort will have to be expended to train or re-educate those already at work in the field. The author states that "the single most striking thing about the new Standards is that they assume for the field a job structure that is hierarchical in nature." The author concludes that an urgent need for job analyses is being presented and that each and every task statement should be analyzed in order to ascertain whether it calls for professional judgment or skill or whether a non-certificated person could perform it as well.

223. Buehler, Ronald G. "Competency: Yes. Certification: No." Audiovisual Instruction. December 1965, pp. 766-767.

This article discusses the DAVI organization's striving for certification of persons preparing to enter the specialized field of educational media. In reference to the states' certification requirements the author found they had the following three requisites in common: (a) "a bachelor's degree (b) varying amounts of successful teaching experience, and (c) 6 to 12 hours in audiovisual education." It is the author's contention that these competencies are inadequate. The author further proposes that those in the media field are "first and foremost educators" and should have the training and competencies of a successful teacher. The conclusion reached is that a great service to the profession would be the forming of "guidelines to competencies for media specialists."

224. Capen, Luce and Shaver. "Certification of Media Specialists: Connecticut, Iowa, Minnesota and North Carolina." Audiovisual Instruction, 1967, p. 498.

1. "An approved program should include a thorough college level study of all aspects related to the design, production and utilization of educational media that

can most generally be assumed to be necessary if the holder of the endorsement is to function effectively in the position of media specialist.

2. The program for media specialists should be a fifth year program leading to a Master's degree.
3. The program should be flexible in order that major developments in the media field will be reflected in the program shortly thereafter. As new technique is explored and new materials and techniques become available, programs for media specialists should be designed so that course work in new areas can be developed as obsolescent courses are dropped for the curriculum.
4. The program should take into account recommendations for the training of media specialists made by various national groups and commissions.
5. The program should include an opportunity for prospective media specialists to take elective coursework in areas related to educational media but not necessarily in the direct line of educational media program requirements.
6. An endorsement as educational media specialist should be separate and apart from any endorsements for school librarians (specialists in library science).
7. The endorsement as educational Media specialist will be granted only upon completion of an approved program, to the holder of a certificate having equivalent requirements in another state, or to applicants who have been working in the media field for a number of years. Approval of an endorsement should be determined by a professional panel of media specialists."

225. Grady, Bill F. "The Preparation and Certification of Educational Media Personnel." Audiovisual Instruction. January 1969, pp. 29-30.

A discussion of the results of research carried out by the author in 1968, the role of the building coordinator and district director or media specialist in technical and administrative areas is specified. Based on these specifications courses of study for the professional preparation of educational media personnel were selected and surveyed from six major areas: professional education, educational foundations, introduction to educational media, media productions, media communications, and professional performance or investigations. Results show that, "The skills, knowledge and responsibility required of personnel in media positions should have their basis in a broad, undergraduate teacher-education program. The elementary building coordinators need the teacher preparation necessary for elementary teachers. The secondary building coordinators need the teacher preparation necessary for secondary teachers. The media specialist needs a combination of both in order to possess the unique skills that are pertinent to the success of media function in the public schools."

226. Noel, Francis W. Practices of State Departments of Education in New Educational Media/Audio Visual Education During 1960-61. University of Southern California, 1963.

A report of the States Audio-Visual Education Study (SAVES) completed in 1963 by Dr. Francis W. Noel and staff through an N.D.E.A. grant to the University of Southern California, the following was found in summary: "In the nation as a whole, a total of 75 positions were reported in state departments of education which carry a designated audio-visual title; these occurred in 32 states (64%). 23 states (46%) reported one or more full-time positions; the total of full-time positions was 54. 20 full-time SDE staff occupied designated audio-visual positions on a part-time basis in 15 states (30%). These states included seven states (14%) which had already reported full-time positions so that in eight states the full responsibilities are carried by a staff member whose major assignment lies outside the new educational media field....thus, in 27 states major responsibilities for (new educational media) are carried by personnel with other department duties."

Included in the report are: (1) "a summary of national patterns of the activities in state departments of education, (2) individual descriptive reports of each state's activities, and (3) comments and observations of the project director and staff members in reference to the role of state departments of education in new educational media and audiovisual education activities. A bibliography and appendices are included.

A chapter is devoted to a portrayal of future developments nationally and statewide as seen by respondents to the studies' interview. Questions asked were:

1."What changes do you expect in devices and materials in the field of new educational media?
2. What changes do you expect in the development of materials distribution centers or production centers?
3. What changes do you expect in terms of personnel working in the new educational media field? Will there be more or less jobs? Greater or lesser training? Fewer or greater functions?
4. What changes do you expect in the financing or expenditure patterns related to new educational media?
5. What would you see as the three major needs of your State in the adequate and appropriate development of

new educational media use in the public schools over the next ten years? - - or - - over the next ten years, what do you see as the three greatest needs of your State in the new educational media field?"

227. Shelby, Clark P., Chairman, "Audiovisual Certification Recommendations." Recommended by the Certification Committee, PEMS Commission, DAVI, NEA at Houston, Texas, March 27, 1968.

Consists of a list of eighteen recommendations for certification requirements, and a chart showing functions and competencies necessary to quality performance of audiovisual functions. The chart's descriptors are "region," "district" and "building" and includes "education recommended" which lists education by course and semester hours.

228. Trenholme, A. K. "The New National Standards for School Media Programs: A Great Step Forward." Audiovisual Instruction. September 1968, pp. 697-699.

Discussion centers around the new National Standards for School Media. A large section of the article deals with the content of the Standards. The author concludes that "implementation of the Standards would require a considerable revision in professional preparation."

229. ________. Standards for School Media Programs. Prepared by The American Association of School Librarians and The Department of Audiovisual Instruction, 1969.

Contents include chapters on "The Media Program In The School"; "Staff and Services In The Media Program"; "Selection, Accessibility, and Organization Of Materials"; "The Resources Of The Media Center: Size And Expenditures"; "Media Center Facilities"; and "Supplemental Services For The School Media Program."

The objectives which motivated this document were: (1) "to bring standards in line with the needs and requirements of today's educational goals and (2) to coordinate standards for school library and audio-visual program." It is pointed out that national standards have "many functions beyond the immediate ones of providing guidelines for media programs of good quality..... they act as a stimulus to correct the serious deficiencies now existing in too many of our schools by (1) assisting in the establishment of media centers where no service is available or (2) accelerating the improvement of media services in those schools where optimum programs are defeated because of lack of sufficient staff and resource or because of other sub-standard conditions."

The document is directed to the media program in the individual school and the standards describe the school's media program, and note requirements for the staff, resources and facilities needed to implement the program effectively. "Standards for personnel, resources, expenditures, and facilities are presented for a unified media program, but are applicable in schools having separate school libraries and audiovisual centers."

Mentioned as future considerations are: (1) the changes and experimentation in the processing of materials; and (2) the plans for specialized supplementary services in the form of national and multi-state regional centers "designed to provide a bibliographic apparatus for the evaluation, selection, and analysis in depth, of materials, through the use of computer systems and electronic retrieval."

The chapter concerning "Staff and Services in the Media Program" is particularly relevant to Media Guidelines and contains descriptions of functions of media personnel, competencies they should have, and recommendations concerning professional education and qualifications. Also pointed out is the need for specialization in the school media field by school, subject matter, or type of media programs, for specific of content; "place, scope, and nature of undergraduate professional education; the types and programs of specialization; the relationships or sequences of undergraduate, fifth year, sixth year, and doctoral programs; and the criteria for accrediting or approving programs of professional education for media specialists in colleges and universities."

230. ___________. "Standards for the Media Specialist: What Are the States Requiring Now?" Audiovisual Instruction, Vol 7, September, 1962, pp. 464-467.

Offers a summary of the standards for media certification in the states of Florida, Illinois, Indiana, Minnesota, Ohio, California, North Carolina, Pennsylvania and Washington.

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